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POPULAR Computing WEEKLY

13 – 19 June 1995

It's the best selling weekly

Vol 4 No 24



DOMARK which launched its *A View To A Kill* game based on stunts used in the new James Bond film of the same name last week (pictured above), is rumoured to be in negotiations to develop a game on *Biggles*, a film due out this Christmas, featuring Captain W E Johns' famous air ace, immortalised in over fifty novels.

Domark's marketing manager Rory Curran however denied that any Biggles game was planned.

Amiga's arrival pressures Atari

COMMODORE looks set to launch its Amiga computer – a rival for Atari's ST and Apple's Macintosh – on July 18, in the US

The machine includes a built-in monitor and single disc drive, and will sell for $1995 (around £1540)

Following last week's Consumer Electronics Show in Chicago, more details of the machine's design have emerged. The 68000 processor based micro offers 256K Ram expandable with a Ram pack to 512K. A 192K Rom includes a mouse-operated windows/icons operating system which Commodore calls 'intuition' and a disc operating system, Amiga-DOS. The machine also includes three custom chips handling animation (Agnus), graphics (Daphne) and sound (Portia)

Graphics display offers either a 60 or 80 column text display, hardware sprites, up to 4096 colours, and its 32K screen offers a range of display resolutions (with different numbers of colours possible) from 320 x 200 pixels up to 640 x 400 pixels.

The sound chip gives four sound channels (or twin stereo tracks) over nine octaves. The chip also handles disc and joystick input/output

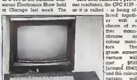
As well as the built-in 3½ inch double-sided double-

continued on page 4 ▶

Amstrad goes for US 128K

AMSTRAD has launched a 128K version of its disc-based CPC 664 at the Summer Consumer Electronics Show held in Chicago last week. The new model is intended for sale in the US this autumn

Like both Amstrad's previous machines, the CPC 6128 – as it is called – is being offered together with a choice of either monochrome or colour monitors. The green screen version will cost $699 (around £540) and the colour version will cost $799 (around £620)



cont on page 5 ▶



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POPULAR Computing WEEKLY

View

Sinclair's troubles continue. Hardly a day goes by without further articles adding fuel to rumours of financial instability at Britain's top micro company.

Considering that Sinclair is currently carrying somewhere around £30m of unsold stock, it is hardly surprising that the strain is beginning to show. Further, with home micro sales significantly reduced across the board Sinclair still has now to find money to buy the components it will need to manufacture its models to be sold this Christmas.

Now it would be easy – as many have – to write Sinclair off as a spent force. But that would be to seriously underestimate the strength of Sinclair and indeed the strength of Sir Clive.

Despite the unexpectedly vicious down-turn in post-Christmas sales the company is still holding on to its approximately 40 per cent share of the market.

Sinclair is astonishingly good at spotting emerging consumer areas and exploiting them before anyone else. Yet he does so within the constraints of entirely conventional (and so less capital intensive) technologies. Somehow he always manages to find 'windows' of opportunity that others miss.

Some, like the Spectrum, have been wildly successful and so tremendously profitable.

Admittedly others are too risky to be successful, like the C5. Some are brilliantly conceived, but go off half-cocked, like the QL. And some grasp success from the jaws of disaster, like the flat screen TV, which now finally looks like coming good.

Sinclair has always walked a difficult tightrope. But he has proved himself a survivor.

Presents . . .

Futures . . .

C128 reviewed. . . check your chess grade on the Commodore 64. . . machine code strategy board game on the Spectrum

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Computer Trade Association Magazine of the Year

Oric bought by French company

ORIC Products International has finally been bought from the receiver by Eureka Informatique, a French distribution company.

Eureka Informatique – which was formerly known as SPID – has acquired all rights to all names, products and current stocks The company will be restarting production of the Oric Atmos and Stratos machines in its newly purchased factory in Normandy, France The offices in Cambridge, previously occupied by Oric, are to be sold off independently

Before it crashed Oric was also working on an IBM compatible machine and a portable model "A substantial part of the technology relating to these machines is available to Eureka," said Cameron MacSween, a consultant who handled the negotiations between Eureka and the receiver, Dennis Cross of Chater and Myhill "I do not, know, however, if work will now continue on them – I suspect it is unlikely"

He added that Eureka had no plans to set up a manufacturing facility in the UK, although prior to the purchase, discussions had been held with Barry Muncaster of Oric Products Export, with a regard to making the machines available in this country

Amstrad goes for US 128K

◄ continued from page 1

The machine is Z80-based and the 128K Ram capacity is achieved by bank-switching two 64K Ram blocks The CPC 6128 includes a built-in 3 inch disc drive and is upwardly software compatible with the CPC 464 and 664

The machine is being distributed in America by a new Chicago-based distributor, Indescomp Inc, with Amstrad acting purely as manufacturer Indescomp Inc was set up in January this year by Indescomp SA, Amstrad's Madrid-based Spanish computer distributor

"Amstrad is not financially involved in the project in any way," said Amstrad's William Poel

It is not clear whether the CPC 6128 will be launched in the UK "The 6128 is being displayed for the benefit of the US market. We had to launch at CES in order to take machines into the shops in the autumn"

"It has somewhat perverted Amstrad's usual principle of not showing anything until it's ready," William Poel continued

Alan Sugar, Amstrad's chairman, said that the 6128 was more likely to come to Britain early next year, as there was no need to add to Amstrad's range at the present time.

The CPC 6128 will initially be sold in the US through a deal with retail giant Sears Roebuck.

Space robots kit crosses Atlantic

TOY MANUFACTURER Milton Bradley has launched a new range of motorised construction kits which can be made into various vehicles, and which should soon be capable of being interfaced with a home micro

The company is stressing the educational potential – schools in Wales have been experimenting interfacing the models with BBC Bs via a control box, using them much in the same way as turtles

Milton Bradley has no plans to launch its own interface, but is considering applications for licences from a number of UK companies

There are three major sets at present, plus an expansion set The price ranges from around £20 for the expansion set, to between £80 and £80 for the largest set

Hopes of Sinclair progress hindered by accounts delay

A MEETING of Sinclair's major creditors was held last week, at which a level of support for the troubled company was agreed.

The meeting was held largely because of the action of Sinclair manufacturer Timex, in selling its stock of Spectrums to Zeta Services (see *Popular Computing Weekly*, June 8) in order to recoup some money on Sinclair products.

The main parties at the meeting were Barclays, Citibank, Thorn Emi, Timex and AB Electronics

The Bank of England has also undertaken to provide a chairperson from its industrial finance division to chair negotiations between Sinclair and potential investors

However, serious talks cannot begin until Sinclair's auditors complete last year's accounts These were due to be ready last week, but have been delayed

Amiga hits Atari ST

◄ continued from page 1

density drive – with a formatted capacity of 880K – the machine includes a detachable 89-key keyboard two-button mouse (configured for one joystick port) twin joystick ports supplementary disc, Centronics parallel, RS2320C serial and Ram expansion interfaces and stereo audio, domestic TV and RGB monitor outputs.

The machine's sophisticated Intuition operating system offers special facilities for multi-tasking, window handling and animation

Commodore also plans to offer – to complement the machine – a range of printers, additional disc units (both 3½ inch and 5¼ inch), a 1200 baud modem, hard disc unit (up to 8M), a video controller package including a genlock interface and frame grabber, and a Midi music interface

Commodore views the Amiga machine as a very significant launch for the company and is aiming it at a broad spectrum of applications in the entertainment, education and home business areas

It UK launch is expected early next year "It will not be announced before January" said Commodore UK's general manager Nick Bessey, "But I would put money on an announcement in January"

Acorn boss appointed from Olivetti

ACORN has announced that Alex Uboldi, a senior director at Olivetti, has been appointed as acting managing director at the Cambridge computer company

The post had been left vacant after Olivetti rescued the company in February

Acorn's chairman, Dr Alexander Reid, had no comment to make on the appointment last week

Following the rescue Acorn's shares have still failed to make a recovery. After dipping as low as 9p at one point last week, they currently stand at 13p Before Acorn's troubles the shares stood as high as 114p.

Receiver called in

PROTEK, developer of the Protek joystick interface, a Spectrum modem, and the Spectrum game *Hunter Killer*, has called in the receiver.

D J Watt of accountants Cork Gully's Edinburgh office, has been appointed to handle the receivership.

● Romik the software company which crashed in March, had debts totalling over £100,000, a creditors meeting revealed last week.

Software auction

AN AUCTION of computer software in aid of the Ethiopian Famine Appeal is being held at County Hall, London SE1 on June 15, starting at 11 am.

Lots will include software titles from US Gold, Activision and Quicksilva among others. The auction is being organised by the industry publication *Computer Trade Weekly*.

First showing of C128 at show

THE highlight of the 6th Commodore Computer Show, held in London between June 7 and June 9, was undoubtedly the first public showing of Commodore's new C128 machine in this country.

Both models, the basic C128 and the C128D – with built-in single 5¼ inch disc drive – were shown.

Commodore has still not announced a definite release date or price for the C128 machines. The machine is expected to be available in volume by September, but may be released to some dealers during the summer. "The C128D will be launched around September or October," said Paul Welch, Commodore's UK sales and marketing manager. The price for the basic C128 is expected to be between £300 and £350, while the built-in disc version is likely to be considerably more expensive, probably nearer £500-£600.


Commodore's new C128 machine

The new 1571 disc drive will also be launched at the same time as the C128. This is fully compatible with the C128, operating as a 1541 in Commodore 64 mode, and as a much faster drive in CP/M and 128 mode.

Also at the show, Commodore previewed a new colour monitor, the 1902. The current 1701 monitor has only a 40-column screen, and so cannot be used with the 128 in CP/M or 128 mode.

Paul Welch also announced one more bundling package for Commodore 64 selling the 1541 disc drive, Commodore modem and *Easy Script* together for £229. The price includes a year's subscription to Compunet.

Commodore has already announced three other special packs: a £199 deal to pack the Commodore 64 with cassette player and *International Soccer*, the £449 *Plus/4* Business Pack (see *Popular Computing Weekly*, June 6) and the £348 pack offering the 1541 disc drive, MPS 801

continued on page 7▶

Letters

QL command

I don't know if other QL users will find the following of any interest to them, but there is one command on the ZX Spectrum which I would dearly like to have on my QL. That is the use of *Line* when used to auto start a program loading, eg, *Save* "name" *Line* 200 would cause a program when *Loaded* back, to start from Line 200.

On the QL, however, you have the *LRun* command which causes a program to start from the beginning which would then need *Gotos Gosubs* or *Procedure* calls to start from the specified part of the program.

I have found a very simple way around this difficulty and that is to *Open* a file to microdrive and let the program to it, ending with *Printing*"Run"

To try it, first have a program in memory then enter as direct commands the following:

OPEN 5,MDV1 name ; LIST 5 ; PRINT 5,"RUN xxx" & CHR$(10) ; CLOSE 5

Now, whenever the program is *Loaded* back by either the *Load* Mdv1, etc, or *LRun* Mdv1, etc, the program will start from the line specified in the print statement above. Run xxx, where xxx is the number.

D Hayward
No4 Lane End
Whelford
Gloucester

AMSTRAD
CPC
6128

64K is enough for British Amstrad users – but in America everything's got to be bigger

Monolithic

Ref Letters page cartoon Vol 4 No 18.

I entered the listing that was on the Monolith and then typed *Run* and for some reason my monitor became 12 feet tall and its weight increased to five tons.

I might have misread some of the hieroglyphics.

W G Gillett
74 Castleway South
Leasowe
Wirral
Merseyside L46 1PB

Out of stock

It seems a shame now that even chain stores can decide if a computer sells or not. I am of course talking about the events concerning Commodore that happened recently.

When the chain stores find themselves out of stock they also find they cannot buy new stock at a cheaper price and so discontinue the computer. The manufacturer finds it is now unable to sell the computer.

If they wanted to, the chain stores could end the computer industry in about a month's time.

J M Shearing
Ivy Mill Lane
Godstone
Surrey
RH9 8NR

Minor bug

During abusive treatment of my Bank Account program I have found a minor bug.

Statement of Account: It has been found that if the option *"EXAMINE/DELETE ENTRIES"* is selected before any Data has been entered for the month in question, the program will stop with an error report.

This will be eliminated by adding the following line:

6045 IF s(1,s)=0 THEN GOSUB 430: RETURN

D G Shedden
Belchamp St Paul
Sudbury
Suffolk

Chicago Show dominated by Activision and Epyx

NEW software at the Consumer Electronics Show, held in Chicago between June 2-5, was greatly reduced from last year in the games and educational areas, although Activision, Epyx and Broderbund introduced major new titles

Broderbund, one of the largest US software companies, concentrated its new releases on the Apple II range

One of the software highlights of the show was the preview of Epyx's *Summer Games II* and *Winter Games*

Winter Games follows the same format of sophisticated graphics and complex animation as the original *Summer Games* The earlier game has now sold over 200,000 copies in the US alone according to Epyx. *Winter Games* features six winter sports: skiing, the ski jump, a ski biatholon, figure skating, freestyle skating and bobsleighing

Summer Games II adds eight new sports to the original title – rowing, triple jump, javelin, high jump, fencing, cycling, kayak canoeing and show jumping

While *Summer Games II* will be available in the US this summer, *Winter Games* will not be released until the autumn

Following on from Epyx's deal with Lucasfilms which produced *Ballblazer* and *Rescue on Fractalus* the company has announced it will be publishing two more Lucasfilm games, *The Eidolon* and *Koronis Rift*.

The Eidolon is a arcade adventure set around the Eidolon, a 19th century time machine, which transports the player to a land of caverns, trolls and dragons The task is to track down the missing inventor of the Eidolon

In *Koronis Rift* the player must try to recover weapons used by ancient civilisations, destroying the base held by hostile guardians of the ancients' weapons

While the new Epyx games should reach the UK through licensing deals, it will not be from CBS, since the contract between the two has been terminated. US Gold is strongly rumoured to be taking over the Epyx licence

Activision's new titles, which should be released in this country through Activision UK, showed a greater emphasis on simulation games, and surreal scenarios. *Ghostbusters* author David Crane's latest effort is *There's Someone Living Inside My Computer* The screens show a diagrammatic representation of a house, with your computer dweller inside, with whom you can converse via the keyboard

Hacker from Activision is an adventure with a plotline similar to *System 15000* in this country the computer plays the part of a computer, with the player as a hacker, trying to discover what you have hacked into

Fast Tracks is a computer 'slot car' construction kit, while the idea of *The Great American Cross Country Road Race* is self-explanatory

Activision announced that it has signed a deal with Lucasfilm, to publish its titles outside North America. *Ballblazer* and *Rescue on Fractalus* should be available in Europe and Australia this summer

Simon and Schuster announced a text adventure based on *Star Trek*, called *Star Trek The Kobayashi Alternative* The player takes the part of Captain Kirk, and must use the Enterprise crew and resources to solve an intergalactic mystery A Commodore 64 version of the game will be available in the States in October

Mindscape announced two licensed titles, one based on a Stephen King novel *The Mist* the other, interestingly enough, based on *A View to a Kill* Mindscape's version, however, is a text adventure covering all the action of the film rather than three separate segments

Mindscape also showed a graphic adventure for the Macintosh, called *Deja Vu* designed specifically to use the Mac's hi-res graphics, windowing capabilities and different fonts

Of the British software houses only Mastertronic was prominent Its budget Commodore 64 discs, which sell for $9 99, have done remarkably well since they were launched in the US Mastertronic launched *Spooks*, *The Captives*, *Finders Keepers* and *Wrath of Magra* for the first time in the US

Commodore Show

◀ continued from page 5

printer with *Easy Script*

Anyone purchasing the £199 Commodore 64 package or C16 starter pack can also take advantage of a Commodore holiday offer – three nights accommodation for two at a range of 300 hotels in Europe

Commodore also showed its willingness to move towards 3½ inch discs – which are fast becoming an industry standard – by showing the 1561, a single-sided 170K capacity 3½ inch disc drive 1541-compatible

"There is no specific launch date for this model, but if 3½ inch discs become the standard, we have the 1561 ready to launch quickly," said Commodore's John Baxter

A number of new software packages were launched at the Show Melbourne House's karate simulation *Way of the Exploding Fist*, due for release next week for the Commodore 64 at £9 95 took up all of the company's stand.

Audiogenic used test cricketer Graham Cooch to promote its new cricket simulation, *Graham Cooch's Test Cricket*, to be released this month at £9 95

Continuing with sports simulations, Commodore itself launched *International Tennis*, the latest in the series which includes *International Soccer* and *International Basketball Tennis* will be in the shops this month at £5 99

Commodore also announced the addition of *Sound Studio* and *Sampler* to its music series. Like *Music Maker* and the *Playalong* album series the two new packages were developed by Music Sales *Sound Studio* turns the C64 into a music synthesiser and multi track sequencer; *Sampler* enables the user to record any sound and then alter it and play it back over a 10-octave range

Sound Studio will be available by the end of the month at £14 95, *Sampler* is intended to be a Christmas release at £69 99

Test cricketer Graham Gooch

Also on the musical side, Island Logic's *Music System* has been converted to the C64 and was on show.

Precision launched a new C64 word processor, *Superscript*, an enhanced version of *Easyscript*, a low cost version of its acclaimed *Superbase*, called *Superbase Starter*, and *Supertype*, a typing tutor *Superscript* costs £69 99, *Superbase Starter* £39 95, and *Supertype* £19 95

Joysticks Survey

Thirteen of the best, compared. In our first Arcade games special feature, issue, *Graham Taylor* gets to grips with a selection of the top joysticks available for micro

BBC Pro Joystick
Price £17 85
Supplier Kempston

The BBC Pro joystick is beautifully designed. You need no additional software and the whole thing can be plugged straight into the analogue port with no need for cumbersome interfaces It also uses eight-way micro switches to register movement which means it's very sensitive maybe too much for some games

The design is sturdy with a metal shaft, fire buttons are large, although the action was maybe a little sloppy – they didn't quite 'feel' like they registered your press Extensive testing on Acornsoft's *Revs* revealed no major design flaws – the simple ball shaped tip provided a positive non slip grip

In short an excellent joystick for BBC owners Quite expensive but, remember, many alternatives also need no interface

Kempston Formula 1 Joystick
Price £16 85
Supplier Kempston

This is a deluxe version of the Kempston Formula 2

The main difference is the use of micro switches which makes for better response and greater longevity (they apparently don't break so easily)

The basic design is the same as the BBC Pro Joystick – strong metal shaft, left and right fire buttons firm ball grip As with the BBC there may be some minor doubt about the fire button response – it's not all that firm.

One point that hasn't been skimped the length of the connecting lead – it's long at five feet and that can be useful Short leads can get easily twisted up in two-player games and force players to stand close together £16 85 is not cheap but I don't think it'll need replacing too often

Kempston Formula 2 Joystick
Price £11 95
Supplier Kempston

The Formula 2 Joystick is Kempston's bottom range item and at £11 95 it's one of the cheapest joysticks around

It uses leaf switches which have a number of problems associated with them For one thing the action is very sluggish To move left you have to shove the whole shaft firmly and far to the left – it takes a noticeable amount of time and on our test program *(Dynamite Dan)* definitely caused valuable lives to be lost There is a longer term question of reliability. The leaf system works a bit like those metal plate battery connectors there is a danger that because of oxidisation the electrical connection could fail to be made

Although unlike the Formula 1 you get a top-of-shaft fire button generally the other aspects of design seem cheaper The shaft is some kind of nylon-like material rather than metal and the grip, although more like a motorbike throttle, is not necessarily easier to use As Kempston joysticks go, I'd certainly rather pay the extra five pounds for the Formula 2

Flightlink Switch Joystick
Price £11 45
Supplier Flight Link

Flight Link has a range of similarly styled joysticks designed for a range of machines The basic model has an Atari connector and costs £11 45 – less than the average for switch-type joysticks

The actual switching is excellent, very responsive indeed and with a reassuring 'click' that sounds like it isn't going to wear out quickly The fire button also sounds and feels like it could take a lot of strain What you lose over cheaper joysticks is in design – the shaft is a short metal pipe, topped off with a short piece of plastic It works perfectly well but isn't elegant If you don't care about looks, this is one of the best switch-type joysticks available

Flightlink BBC Joystick (pair)
Price £17 95
Supplier Flight Link

These joysticks are the same overall design as the Flightlink switch type joystick but use an analogue system and come as a pair both connected to one BBC analogue port connector

At £17 95 for a pair of joysticks these are obviously very cheap although I wonder how many games on the BBC have facilities built-in for two joysticks – not many I think

Analogue systems tend to be unreliable but this one feels good and is surprisingly responsive, although it doesn't re-centre itself automatically

In fact it's fair to say you could easily believe it was a micro-switch system – Flight Link give it a 300,000 cycles track and wiper life which translated means they expect it to last a long time Very good value if you need two joysticks (a single analogue joystick costs £9 95)

Vulcan Gunshot Joystick I
Price £8 95
Supplier Vulcan Electronics

A very cheap analogue joystick that looks pretty good, has a reasonable grip and a pretty good response The doubts come with long term reliability We've had one in the *Popular* office for around six months or so and it's broken – the amount of use it got was too much for it and the switch mechanism gave in

However it had to work hard in that time and maybe it was just a dodgy one from the factory

If you're limited in cash they don't come much cheaper

Vulcan Gunshot Joystick II
Price £11 95
Supplier Vulcan Electronics



The only difference between this joystick and the Gunshot I is the fact that it's black and that it has an auto-fire switch.

Setting auto-fire to on is the same as holding down the fire button continuously This is fine for your basic blast-'em-up game but not that useful in *Manic Miner*-style games where all that happens is that you bounce around everywhere

If you are absolutely addicted to games which need lots of laser destruction you might think the extra £3 for the fire switch is worth it. Most people probably won't need it

The Poss
Price £25 00
Supplier Computer Games

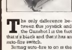
This joystick uses six-way leaf switches rather than micro switches but it responds well

There may be a few doubts about long-term reliability partly due to the mechanics of the leaf system and partly because of the construction – the joystick shaft seems to be mainly plastic.

Visually the joystick is neat – smart black and grey colour scheme with a moulded grip One complaint here, the grip is short and the fire button is mounted on the top This means that to operate the fire button the thumb has to be pressed down in a slightly uncomfortable way

A reasonable mid-range analogue joystick

Bat Handle Joystick
Price £25.00
Supplier Computer Games



A very high quality joystick using a specially developed left system to register joystick movement

The Wico leaf system does appear to give the kind of response you d expect from a micro switch system and is apparently as reliable.

This joystick has a thick metal shaft which recentres automatically and twin fire buttons One is top-mounted the other in the base – a switch selects which is in operation

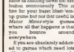
The design is plain, square base and tapered plastic grip It looks like it might cause you to slip but in practice it never gave any problems

A very nice joystick but £25 is a lot compared to a Kempston Micro Switch at £18

Super Three Way Command Control
Price £27 00
Supplier Computer Games

This is basically the Bat Handle Joystick with a choice of grips – a round handle, a tapered plain grip and your standard ribbed motorcycle-style handle Changing between grips is simple and each handle fitted firmly I can't believe that people really need three handles but I suppose the First Division addict may have a use for them.

Super Champ
Price £12 95
Supplier Dean Electronics



Sheer amount of plastic makes this one good value. It's probably the largest joystick available. That and the matt black colour have given it such macho appeal that it's been the most successful joystick in the US for a while Although not micro switched it has a tough but flexible ring of plastic between shaft and base that prevents you breaking it easily.

The grip is firm with a fire button mounted both on the top for thumb action and another just below that for first finger – it s very easy to use

All in all unless you want the extra sensitivity of micro switches this could be the joystick to go for.

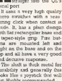
CGL Champion
Price £11 99
Supplier Computer Games



This is a budget-price joystick which nevertheless includes stick and base-mounted fire buttons and so auto-fire switch

The saving is made in the swich design This uses some sort of leaf system with an action that feels a little doubtful I can imagine that it might not last very well, but is still good value

QL Sure Shot
Price £25 95
Supplier Eidersoft



A very high quality device which plugs straight into the QL's serial port

It uses a very high quality micro switches with a reassuring click when contact is made. It, has a plain design with flat rectangular base and a taper-style grip Fire buttons are mounted left and right on the base and on the top and all have a very good and decisive response.

The shaft is thick metal for durability and generally this looks like a joystick that will last Highly recommended.

Dean Electronics, *Glendale Park, Fernbank Road, Ascot, Berks*
Computer Games Ltd, *CGL House, Goldings Hill, Loughton, Essex*
Vulcan Electronics, *200 Brent Street, London*
Flight Link, *Unit 12 The Maltings Turk Street, Alton, Hants*
Kempston Micro Electronics, *Singer Way Woburn Road Industrial Estate Kempston Beds MK42 7AF*
Eidersoft, *The Office Hall Farm, North Ockenden Upminster RM14 3QH*

GET THE PICTURE GET THE PICTURE

OUT OF A SEA OF SOFTWARE...



GET THE PICTURE GET THE PICTURE

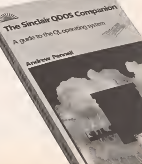
QDOS — for smooth operators

If you have a Sinclair QL and you want to program effectively in machine code, then Andrew Pennell's latest book is for you.

The Sinclair QDOS Companion is a complete guide to the working of the QL operating system. It begins with an introduction and a chapter on multi-tasking, before going on to cover the 8049 second processor, input/output, device drivers, exceptions, interrupts and the Job Scheduler, and QDOS utilities. The final chapters show you how both to extend SuperBASIC and make use of external ROMS.

The book is definitely not just a rehash of the QDOS manual, but extends the basic information to give you a broader understanding of how best to make use of QDOS. The QDOS traps are described not in numerical order but in a more logical order based on their use.

Andrew Pennell is an experienced Sinclair author. Practical Computing described his previous book Assembly Language Programming on the Sinclair QL as: 'An excellent introduction . . eminently readable'



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Complete Arcade

SPECTRUM

Knight Lore 10 Clear 24831 Restore Gosub 90 Gosub 90 Poke 52000 61 Poke 65176 0 Poke 62258,201 Poke 62410,251 Poke 62411 201 Randomise USR 62374
20 Poke your routines here eg Poke 53567 0 is infinite lives
30 Print USR 24839
40 Data 23288 23308 231 22 94,188, 12 14, 4 96 255, 35, 205 86 5 201
80 Data 41012 41021 35, 113 188 17, 86, 338 1, 178, 1 175
20 Read s e For p = s to e Read d Poke p d Next p Randomise USR a Return
Just type in the above then play your original from just past the loud header
Poke 50084 201 stops metamorphoses
Poke 50208 0 gives infinite days
Poke 49288,n n is number of objects needed to collect.

Underwurlde Use the *Knight Lore* Program but make these changes:
Line 90 change 41012 to 41006 and 41021 to 41017
Line 20 change to Print USR 28810
Line 30 is Poke 20378 0 for endless lives or Poke 46019 201 removes moving sprites

Mutant Monty Poke 24600 0 Poke 34867 0 Poke 34835 0 Poke 35321 0 These give infinite lives

Project Future Poke 27988 0 removes aliens

Cookie Poke 28696 62 Poke 28690,8 Poke 28297 0 Poke 28683 0 endless lives

Pyjamarama To get past the hyperloader type in this recode It will load the game then stop it from auto starting
10 Clear 29999 Restore
20 For a = 1 to 14
30 read b Poke(a + b28989),b
40 next a
50 Print "Insert game and press play
60 Randomise USR 30000
70 Poke 32844 207 Poke 32845,28
80 Poke 32848,251 Poke 32849,201
90 Poke 32788 244 Poke 32321 0
100 Randomise USR 28729
120 Stop
190 Data 221, 33 58 187, 17 218 1 62 255, 28 205 86 5 201
Once the game has loaded you can enter your pokes Poke 48883 x x is number of lives To start the game Randomise USR 44649

Fall Guy Type in the following for infinite lives.
10 Clear 28100
11 Load "" code
12 Randomise USR 56100
13 Load "" code
14 Poke 44204 0
15 Randomise USR 41200

Sky Ranger (Level) Code (1) oster (2) magic (3) pilot (4) stamp (5) para (6) event (7) recap (8) allol.

Horace and the Spiders Poke 28153 0 – no hills on Level 1
Poke 28773,0 – no spiders on Level 1
Poke 29626 0 – ropes are pulled in fast
Poke 29720,0 – jump onto next rope when you like
Poke 30070 0 – all spiders die on Level 3 instantly
Poke 30419 0 – hills and more hills for masochists
Poke 30410 0 – slow spiders on Level 3
Poke 30118 0 infinite spiders on Level 3
Poke 29626 62 – stops ropes being pulled up on Level 3

Stop the Express before entering the Pokes do the following: Type MERGE "" then press Enter, and press play on your original tape Type Clear 29999:Load "" code then press Enter, and press play on your original Stop the tape First type Poke 46111,201 Randomise USR 46096 then press Enter You can now enter your pokes To run the code type Randomise USR 30788.
Poke 34484 183 Poke 34926 183 Poke 38367 0 – endless lives.
Poke 35780 0 Poke 36849 0 – unlimited time
Poke 40673 0 Poke 40674 0 Poke 48281,N – start at carriage number N (Be careful some values may crash game) If it does not work then add. Poke 40078 4

Frozen Bees Poke 34810 0 infinite lives.

Pi-Balled Poke 44418,x – x is number of lives

Psytron Poke 28828 0 Poke 28828 0 endless fuel.
Poke 41098 17 Poke 41099 32 Poke 41100 1 Poke 41101,0 – endless men
Poke 26142 62 Poke 26143,295 Poke 26144 0 endless oxygen

Frank n Stein Poke 28277,x – where x is the number of lives

Ah diddums Poke 24942,x – where x is the number of lives.

Pyramid Poke 44688,0 – endless energy

Arcadia Poke 28776,0 – infinite lives

Zip Zap Poke 53781,0 Poke 53782 0 Poke 53783 0 Poke 54141 0 Poke 54142 0 Poke 54143,0 Poke 54144 0 – infinite energy

Wild West Hero Poke 23621 x – where x is number of lives (31 max)

Mr Wimpy Poke 26868,0 – infinite lives
Poke 33809 x where x is number of lives.
Poke 43188,0 – infinite peppers.
Poke 23751,x – where x is number of peppers
Poke 53521 0 – skip first stage

Maze Death Race Poke 26730 0 Poke 26731 0 Poke 26636 0 Poke 26860 0 Poke 26771 0 Poke 28772,0 – works with interface I

Kosmic Kanga Poke 35135,x – where x is the height to jump Poke 23094 x – where x is the number of lives 38612 0 – infinite lives.

Monty Mole Poke 38004 0 – endless lives.
Poke 38602,201 – no crushers
38874 201 – lets you fall a great height.

Eskimo Eddie Poke 24083,24 Poke 24082 76 infinite lives.

Kokotoni Wilf Poke 43748 0 – infinite lives.
Poke 42214,x where x is the number of lives
Poke 42177 2 – changes some of the sprites to red, so they don't kill Wilf.

Lazy Jones Poke 58883 0 – infinite lives.

Spectacle Password "Everyone's a nervous wreck

Scuba Dive Poke 56711,x – where x is the number of lives.
Poke 48090 0 – makes player two's clams open less frequently

Android Poke 60546,25 Poke 60250 35 Poke 53887 0 – infinite lives.

Mutant Monty Poke 34933,0 – gives 256 lives.

River Rescue Poke 33620,0 – infinite lives Player 1
Poke 33860 0 – infinite lives Player 2

Zaxxon (Star Loom) Poke 48225,x – where x is the number of lives

Son of Blagger Merge the loader and delete Lines 70 80 81 85 90 Insert line 48 Poke 27876 0 The above Poke will give you a hacker menu (All routines)

Gilligans Gold Poke 52882 0 Poke 58821 0 Poke 53889 0 Poke 53885 0 – unlimited lives

Finders Keepers Poke 24282,0 – infinite lives
Poke 30384,x – where x is the number of lives.

Fred First type LOAD "" CODE 28384 press Enter then press play on your original When loaded enter SAVE "FRED" CODE 38800 26880 Press Enter and save this on a blank tape Rewind your tape, then type LOAD "" CODE 24500 Press enter and play on your new tape Enter your pokes then to run the code enter RANDOMIZE USR 30885
Poke 31175 0 – this will make the last unit of power last forever
Poke 30815,X Poke 31509 X. Poke 44986,X – where X is the number of power units (max 240)

Sir Lancelot 10 Input "no of lives ",X
20 For A = 60000 to 60024
30 Read B : Poke A,B
40 Next A
50 DATA 49 185 81 081 33 126 81 17 126 26 62 103 24 205 86 5 244 60,X,50 38,92 195 5 92
60 CLS
70 Print "Load Main Headerless Block"
80 RANDOMIZE USR 60000
Forward your tape until the main headerless block then run the above program when you see the message press play on the tape, this will give you X lives

Chuckie Egg First type MERGE "" Poke 24801,195 Goto 1 Then press play on your original the game will load normally but when loaded you will see the

Off message. You can now add your own routines, and to run the machine code type RANDOMIZE USR 40000
Poke 42837,0 This will give you infinite lives
Poke 38181 0 This will give you a never decreasing bonus
The following program will convert *Chuckie Egg* to work with a Kempston joystick.

```
10 DATA 38277 103
38321 71 40311 71,
40898 71 38341 78,
40854 73 40850 79
40886 88 40713,87
20 RESTORE
30 FOR I – 1 to 9
40 READ A,B
50 Poke I 219 Poke A+1 283 Poke
OA+2 0 Poke A+3,0 Poke A+4, 255 Poke A+5,B
60 NEXT I
```

The screens are 372 bytes long, then held at address 46000 onwards. The values in the addresses are as follows.
0-Blank Space 170
1 Right side of the ladder 171
2-Left side of the ladder 172
3-Egg 173
4-Food 174
5-Floor & walls 175
166-Top ring of the cage 176
169-Top ring of the cage 177
178
179
180
181
The cage itself
There are 2 sections of the cage each of 4 characters
The following program will fill in all of gaps at the bottom of the screen.

```
10 FOR F – 46000 to 51375 step 672
20 FOR C 0 to 31
30 Poke C+F,5
40 NEXT G
50 NEXT F
```

The following program will put food all along the bottom row

```
10 For F – 46032 to 51278 step 672
20 For G – 0 to 31
30 If Peek (F+G)=0 Then Poke (F+G) 4
40 NEXT G
50 NEXT F
```

The food can be changed to eggs, or to make the game easier change the 4 to 5 in Line 30

The Screen address

Screen	Addresses
1	46000-46671
2	46672-47343
3	47344-48015
4	48016-48687
5	48688-49359
6	49360-50031
7	50032-50703
8	50704-51275

Some of the Characters are at addresses
(poke 23678 x Poke 23676 y)

x – 256	y – 138	ladder, eggs, food floor words
x – 285	y – 138	enlarged characters
x – 248	y – 138	thick characters
x – 48	y – 138	cage
x – 190	y – 138	words

Jetset Willy Save screen by pressing 8 at any time (but start the tape first because no start tape message will appear).
Poke 38838 131 Poke 58800 1A Poke 38601,204 Poke 34987 0 Poke 34986,0 Poke 34896 0
For I – 38847 to 38880
Read A – Poke I,A.Next I
For I = 58800 to 58318
Read A – Poke I A.Next I
Data 283 286 231, 229, 281, 33 300 286, 17 17 0 173 308 184 4 8 50 118 18 285 17 0 27 88, 288 231 33 0 94 205 184 4 203, 231, 228,253,205 14 284 14, 284 14 284 0 0 0 0 0
Data 3 22 67 82 62 33 78 38 38 38 33 0 27 0, 94 0 27
To jump rooms. Go to landing and get to lowest level then type in the letters WRITETYPER don't go up ladder. You can now jump to any room by pressing a sequence of numbers 1-8 and then press 9 at the same time. Eg for Off Licence just press 9. To go to Bathroom press 1,6 9 all together

Android II In the first clearing kill yourself 4 times then go over a mine at the same time as a monster you will then lose another 2 lives but due to a bug you will now have infinite lives and infinite time

Ghostbusters Accounts:
Name Ghostbusters
Account 00169808 ($ 100 000)
Name S
Account 20203602 ($ 36 000)
Name Tong Billy
Account 118700)) ($ 112 100)

Crypt Level coders. 1) Carnell 2) Software 3) kevin 4) all 5) the 6) aliens

Cavelon Press all the keys on rows QWERTY and ASDF when it says Hi Chris what do you want? Press a number from 1 to 6 to start at that level. Alternatively move man into maze and type JS WILLY

Wheelie Enter codes. 1)ENTER 2) WITTY 3) SHARK 4) REBOD 5) XENON 6) ZX250 7)SMOL3 8) HERMES

Tir Na Nog If touched by a sidhe press symbol shift 8 at once to restart game from your current position (may need to repeat)

Knight Lore If you prop an object in the wizard's room the spell doesn't appear, knocking you to pass through the room more easily

Zaxxon For infinite lives Poke 36743 0

Pssst area For infinite lives. Merge the loader then insert Poke 28151 0 before the lel 1 – USR 34878 statement

Manic Miner For infinite lives Poke 36136 0 after Basic load or between 30 and 40

Glass Kiss 1) Merge Basic Loader
2) Edit after the Load lines Poke 28896 288 (288 lives)
3) Change USR to 28005
4) Run program and restart Tape

Chiller Poke 34085,0 – on energy loss
Poke 36781 0 Poke 40668 0 Poke 40863 0 – stops moving sprites
Poke 41158,0 top ones vanish

Sabre Wulf Poke 43575,255 for infinite lives (works on series 5 Spectrum with Interface 1)

Tir Na Nog (no sidhe) Poke 34808,200

Manic Miner To change screens (Bug Byte version type on keyboard when) game is running 2301789 When boot appears use combination of key 8 plus one or more other numbers to change screen eg press 8 then 5 for the warehouse

Tor Software Projects version Type TYPEWRITER

Moon Alert Poke 34754,0 – endless lives
Poke 42404 n n is number of lives
Poke 40694 195 – Immortality
Poke 37034,801 – no aliens in air

Tornado Low Level Edit these lines in header for infinite lives 20 DATA 58 82,255,221,33, 0 58 17 154 181 205,86 8,88,0 50 190 126,80 17 132 201 50 For a = 68423 to 68444 3000 Randomize USR 68423

Early ULTIMATE games use Poke 23798 1 to allow the header to be edited

Lunar Jetman Poke 38983 0 or Poke 38856 224 Poke 36946 3 be endless lives

Select Level Poke 43093,x 1 where x is level 96

Trans Am Break game after main block has loaded. Type Poke 25446 0 CONTINUE

Pe-Balled Poke 46441,0 for bad line lives

Jet Set Willy Endless lives Merge header Enter line 30 Poke 38888 0
Poke 34278 255 – Maria disappears
Poke 41983,255 – Makes number of objects to collect only one
Poke 38477,1 – Fall from any height
Poke 34736,n – Change start room number
Poke 38036,236 Allows interface two to remain connected
Poke 59900 255 Removes Aunt Bug
Poke 60931 0 Poke 43189 11 Poke 59801 32 Poke 59878 4 – Removes has yon tree bug that makes game impossible
Poke 50688 170 Poke 40683 170 Blocks of Hades
Poke 50812 168. Poke 60620,168 Poke 50638 170 – Puts ledge in Security Guards so you can get under driveway avoiding Forgotten Abbey
Poke 58342 0 Poke 36380 0 Poke 36387 170 – Puts invisible object in a place where it is easily collected on first landing
Poke 37974 0 – Collects objects on entering a room
Poke 30123 0 Disables anything that moves
Poke 36363 50 – Higher jumping
Poke 37666 0 Poke 37964 0 – Walk through monsters

Finders Keepers Poke 60364 255

Tutankhamun Poke 34963,87 Poke 34970 98 – to change start room
Poke 27270 x where x = 10 – Extra lives
Poke 37780 0 Immortality

Complete Arcade

Hunchback Poke 24760 255 for and less lives or try Poke 26888 0

Mugsy Poke 43012,0 Poke 45868 0

Zaxxon Poke 64743,0 Poke 39864 0 – infinite lives

Ground Attack Poke 28513 0 – endless lives

Harvey Goes Skiing Poke 30027 0 Poke 30644 0 no ten charge
Poke 28008 0 Poke 38386 0 – No cars no frogger stage
Poke 30782 0 – No see balance fee

Jack & Beanstalk Poke 34110 0

Giant's Revenge 10 Clear 24349 Poke 23306 115 Poke 23807,248
60 Load "" Screen$
Load "" Code
25 Poke 34306 0
30 Randomise USR 24430

Sabre Wulf Merge header Type Poke 33788,1 Clear 65536 Edit the line and delete the Print USR 23424 Add line 10 that includes your pokes Add line 60 Print USR 23424
Poke 83878 255 – 1 player infinite lives
Poke 48530,255 – 2 player lives
Poke 45636,x – Number of lives
Poke 41728 255 – No then on gained lives
Poke 44695 0 – disable baddies, as they only appear when the fire button is being pressed. To get an object stand on it and press fire
Poke 44796,0 – indestructable Sabreman
Poke 45001 0 41011 0
Poke 31806 0 45390 0 – stay blue super fast and no monsters
Poke 39702,30 – gets rid of materialising monsters
Poke 44668 169 44678 205 44677 30 – permanently cyan

Due to the number of pokes/tips we received it is impossible to ensure that every one works; we have done our best to check as many as possible but cannot guarantee the results.

Lunar Jetman Poke 36864,244 36865 3 – infinite lives
Poke 43117,x – where x is no. of lives
Poke 37295,201 – no enemy
Poke 43080 x 1 – where x is level (x < 99)

Trans Am Poke 39446,0 – infinite lives

Backpackers Guide to the Universe To make a print-out of the guide on ZX or Alphacom printer
1 Clear 65535 Load "" Screen$
2 Paper 0:Ink0
3 Print at 10 0
4 Load "" Code
5 For x is 26160 to 26124 Read a Poke x a Next x
6 Poke 26180 21
7 Data 33 127 839 285 230 1 194 815 113 205 173 14 194 215 112
8 Randomise Usr 09124
Now load guide. Press Space for a copy

Boulderdash On cave E go all round perimeter then under gem heaven wait until firefly is going up then follow wait at top until both fireflys are gone then get gems and retreat

Hunchback Poke 36868 0 infinite lives
Poke 24760 x – where x is number of lives

Moon Alert Poke 62884 195 infinite lives
Poke 44345 24 – stops time decreasing
Poke 62068,2 62868,2 – keeps scrolling bits (whole screen)
Poke 42404,x – where x is the number of lives (14 max)
Poke 39764,0 – endless lives
Poke 37085,201 – no enemies
Poke 26112,255 – move left at 100 mph
Poke 28371-28607 – hi score label

Defenda Poke 37861,0 – infinite
Poke 34180 0 – infinite smart bombs
Poke 22730,x – where x is the number of lives

Tutankhamun Poke 37783 0 – infinite lives

Zoom Poke 64743 0 – infinite lives
Poke 69131,x – where x is the number of lives

Atic Atac Poke 39619 0 – infinite lives
Poke 36383 0 Poke 36386 0 stops energy drains
Poke 36874,0 Poke 39092 0 –
Poke 37220 178 Poke 37880 128 – makes doors open more frequently

36373,x – where x is the number of lives
Poke 28075,0 – allows your rocket to take off with only one fuel block
Poke 23080,0 – infinite lives

Pssst Poke 28088 0 – infinite lives

COMMODORE 64

Bounty Bob Strikes Back On level 1 after getting coffee pot type 8 and press F7 to go to level 8 after getting flower pot type 1 and press F7 to go to level 4 on level 10 after getting pitchfork type and hit F7 to go to level 14

Super Gridder To make grid invisible until run over: When loaded press Run/Stop + Restore then type SYS 8484

Tir Na Nog Poke 34306,200 makes complete game easier

Booty Hold down keys K,E V,I,N all at the same then for what mode with unlimited lives

Manic Miner For infinite lives: Poke 12871,234

Falcon Patrol For infinite lives Poke 16784 000

Bruce Lee Get two joysticks sellotape the fire button down which controls the Yamano and move him out of the way. You get more lives and only have to worry about the Ninja

Airwolf When route is blocked by spinning ball when you reach third screen move it by shooting two switches at cave bottom – shoot it before it floats to the ground.

Entombed Try whipping anything that blocks an exit

Spy vs Spy On one player game wait in airport room booby trap doors, when the computer has objects he will be killed getting to the airport – get objects and leave.

Zaxxon To make ship indestructable simply type Red before starting the game

Attack of the Mutant Camels Load first part without running it (type Verify and then Return) Load second part by typing Load "",1,1 and enter Poke 11738,268 SYS 4096 you now have no limited lives.

Hesperit Poke 21876,178 Poke 21878,1179 (infinite lives)
Poke 20400 189 Poke 20401 0 Poke 20402 234 disables collision detection

Gridrunner Poke 38998 173 – infinite lives

Hover Bovver Poke 36886 96 – infinite lives

Ancipital Poke 22743 57 Poke 22744,87 Sys 12084 to start

Matrix Poke 38488,234 Poke 20888,234 ditto

Arcadia Poke 10930 236 Poke 10918,234 ditto

Rollerball Poke 28000 173 Poke 28821 173 ditto

Armageddon Poke 4088,1

Skramble (anirog) Poke 8808,179 infinite lives
Poke 3808 128 Poke 3805 0 Poke 3810,234 no collision detection

Blagger After loading tap space bar – lives should change to 8 Then pressing CTRL + alphabet keys changes screen.

Manic Miner Verify "" Return
When loaded type
Load "",1,1 Return
when load error appears
Poke 16418,x x is screen number 0-19
Poke 16484,x x is lives (not too many)
Sys 16384 to begin

China Miner Verify "" Return
Load "",1,1 load "",1,1 Return
When loaded type Poke 28373 0 or Poke 33330,x x is the screen to start 0-64
Sys 39127
Every time after this you run/stop restore type Sys 64738 and type the pokes in again

Entombed To get rid of Mummies: Break into program – you'll need a reset board which won't corrupt the code – then use following pokes Poke 37838 130 Poke 27888,20 Poke 27860 234 then SYS 3128 then fire button then F1 key then fire button you can then play (this only works in the corridor)
Also in the room of pools stand in the white pool then in the red pool then walk to the wall and stand to the right of the yellow pool then jump left as you land in the centre of the yellow pool

Addicts Guide

then push forward the joystick the jump technique if used at oth er blocked doors will get you through

VIC 20

Perils of Willy	Load game Press CTRL Q and RESTORE Lives = Poke 11373,200 No chase disappearing - Poke 11280 234 Poke 11368 234 Start screen Poke 11378 x (x = 0 to 31) Restart game with SYS 13289

AMSTRAD

Pyjamarama	10 Memory 8191 20 Load 30 Poke 18087,0 40 Call 8192 Replace the header with this to get infinite lives
Roland Goes Digging	10 Memory 17000 20 Load 17800 30 Poke 17879 0 40 Call 18688
Defend Or Die	10 &368 20 Load "Defend or Die 30 Poke &84e4 &99 Rem lives 40 Poke &84e8 &99 Rem smart bombs 100 Call &4016
Karl's Treasure Hunt	10 Memory 12888 20 for f 1 to 3. Load "" next 30 Poke 38102 lives 40 Call 38984
Roland in the caves	Press CTRL C to wau a level at any time Shift + A goes to next screen with 100000 pts
Bugger	Poke 32818,x x is lives less than 240 Poke 31938 0 Poke 31840 0 together disable the conveyors so that they act like dry land. Poke 38578 0 Poke 32580 0 drop from any height In demo mode find the start screen you want and press 'ADGJL simultaneously now start as normal and you will begin on your chosen screen.
Roland in Time	Type Memory 4888 Load "Rontime" 5000 When loaded Poke 5850 167 (endless lives) To run it Call 3000
Electro Freddy	10 Memory 10000 20 Load A1 Load Load Load Load
	30 Poke 36358 258 40 Call 38323
Punchy	10 Memory &1FFF 20 Load "code 30 Poke &20A9 658 40 Call &2000
Roland on the Ropes	10 Memory 4800 20 Load "Roland.d 30 Load "Roland.c" 40 Poke 25804 0 Poke 25582 0 (minus addresses) 50 Call 41100
Manic Miner	Poke &6F8D x x is lives Poke &6F85 0 endless lives poke 77401,24 switch screens by pressing ESC Poke &713E 0 drop from any height Poke &7311 0 stops air running out
Football Manager	Break in and Goto 5813 to will the cup Goto 9120 if in the top three will earn your success money
Jetset Willy	10 mode 1 20 memory &7fed 30 Load 40 For n = 120 to 244 50 Read a$ 60 Poke n,val("&" + a$) 70 Next 80 cls 90 call 170 100 Data 3E C9 32 80 01 21 00 90 11 01 80 01 05 00 36 00 ED B0 CD,EE 7F 01 00 18 21 20 20 22,78,AF C3 21 5D AF 110 Data CD 53,AF 78 86 87 87 87 47 78 C6 05 18 06,AF 06,F2 C8 00 3E,7F,3E F0 81,C3,4A, AC
Hunchback	10 Border 0 ink 0 0 ink 1 18 ink 2 5 ink 3 25 20 Ent 1 100 2,2 30 Ent 2 30 -8 2 40 Env 13 10 -2,10 50 Pen 3 60 Memory &3BFF 70 Load Hon 3 &4C00 80 Poke &61F8 1 90 Poke &61F8 1 100 Poke &61F8 + 18 1 110 Poke &61F8 + 19 1 120 Poke &61F8 + 08 1 130 Poke &61F8 + 27 1 140 Poke 20780 0 150 Call &5431
Android 1	Infinite lives Poke &6391 &637A, &938F and &93A0

BBC

Mr EE	After the page has come up press Break, type *Load MREE 1800 < < Return > > ?&1EC8 = &EA < < RETURN > > Then type CALL&4300 < < RETURN > (Infinite lives)
QBert	Let the whole game load then press CTRL + Break then type PAGE = &1700 < < RETURN > > OLD < < RETURN > > .LIST2300 < < RETURN > > Change MEN", from 3 to the number of lives you want
Castle Quest	To get out of jail, take the steel jump and throw it at the torch, take the seal and torch and get to the top of the door throw torch on bed and jump past guard when he rushes in
Cylon Attack	Speed up game with ?&FE88 = 81 ?&FE46 21 (CR) - this also works for Chuckie Egg
Snapper	For extra lives Chain "Snapper as burial but when snap3 has finished loaded press Escape and enter ?&FDD = &7F and then Run
Elite	To make a lot of cash trade computers from rich industrial planets to poor agricultural. If attacked by a few ships follow one slowly. The pattern of evasive manoeuvres will save you
Frak	*Load the last part of the game data type ?&3038 = &d for infinite lives or ?&304DD 1 so that the escape key changes levels Call &488A to start game

ATARI

Diamonds	Poke 8 0.Poke 744,16 x = usr(40880) Now enter and run this 10 restore 1000 for a = 0to25 read the poke 180 + x nn next x 1000 data 169 96 141 30 8 32,0,8 169 76 141 80 21 169 96 141 81 21 169 21 141 82,21 76 83,10 2000 end Now put diamonds in the tape recorder type x = usr(82404) and press return press r after the bleep and start tape when the title page appears you have 1 5 seconds to press the system reset! New type x = usr(1280) the rest of the game will load. If you don't have a disc system don't load the dos before using the routine

QL

Invaders	Add shooting sound 100 For n = 0 to 30 Step w 110 If n = 30 Then R 240 Else R = N + 3 120 BEEP 1800 N,R,18 3 0 1

ELECTRON

Zalaga	Load the first program with LOAD "Zalaga" and type PROCpugwash. The Electron will play the Pugwash theme tune with two voices

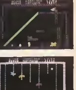
DRAGON

Hungry Horace	To get high scores get to bell and stay there till it stops ringing
Ninja Warrior	Load game as normal but before typing EXEC type Poke 9888,n. n is lives 1 to 255
Planet Invasion	As above but Poke 7888 n. n is 1 to 14 larger values cause a crash
Skramble	Skopf Poke 32781 &H8E Poke 32782 &H04 Poke 32783 &H00 Poke 32784 &HBD Poke 32785 &H87 Poke 32786 &HEB Poke 32787 &H39 Exec 32761 Poke &H1C7E (player 1 lives) Poke &H1C84 (player 2 lives) Exec 4086
Whirley Bird Run	Poke &H2078 lives Poke &H2075 stage
Lunar Rover Patrol	Poke &H8738, lives
Manic Miner	10 CLEAR 200 32999 20 ST = 32800 30 INPUT A$ 40 FOR A = 1 TO LEN(A$) 50 POKE ST VAL(&H + MID$(A$ A 2)) 60 ST = ST + 1 70 NEXT A:GOTO 20 Enter this CCBD3FFD380A884E 87380C8608873817 6E0600A684A789F6 43900]8C7E8A28F3 39 Then press break and save using CSAVEM" MINAL 32800 32840 32800 Then NEW the basic and load manic miner with CLOADM 1313 Then enter EXEC 32800 To select a screen, press enter as normal then press a key from A to V (in upper case) To alter the number of lives push 32812 in MINAL.

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CHUCKIE EGG 2

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CHUCKIE EGG 2 COMPETITION!



Our intrepid hero "Hen House Harry" of **"Chuckie Egg"** fame has been called in to help a **"Chocolate Egg"** manufacturer sort out his automated factory which has gone haywire. Harry using all the skills he acquired working in the Hen House must get the wheels of industry moving.

Not only does Harry have to collect the ingredients to mix the eggs, but he will also have to collect the parts for the toys that go inside the eggs.

As if all these problems were not enough there are a number of other items that Harry will need to find and use to be able to complete the task. Things like ladders, bits of girders, keys and many more.

Chuckie Egg 2 contains 120 screens, plenty of surprises, and it is a true Arcade/Adventure game — *you don't just find things you actually move them and use them.*



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Laser Cycles

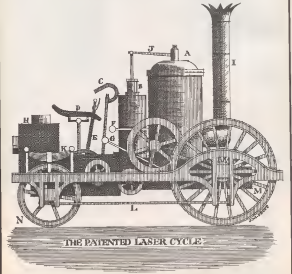
For our Arcade issue, what better than a machine code implementation of the classic game Light Cycle on the BBC B by Jeremy Thornton?

The object of the game is to guide your laser cycle around the screen and to box in your opponent with the trail that you leave behind. Colliding with either your trail, your opponents trail or the wall will cause your destruction! It is either a two player game or you can challenge the computer

The game itself was written in assembly language with the user interaction at the beginning and end being handled by the Basic The machine code itself occupies less than half a K, in fact only 440 bytes It is located just below the model screen between &2CDO and &2E88

The small piece of code at the beginning, between &0CO9 and &0C1E is an interrupt routine which intercepts the operating systems and if a key has been pressed stores it before returning it to the O.S routine at &DC93

When a key is pressed its specific code is stored in &EC the previous number being pushed into &ED In this way the keys used can be changed by altering the data at Line 2990



```
10REMark Laser Cycles by Jeremy S. Thornton
20FORpass%=0TO2STEP2:P%=&C00
30[OPTpass%
40PHA
50TXA
60PHA
70TYA
80PHA
90LDA&EC
100STA&AE
110LDA&ED
120STA&AF
130PLA
140TAY
150PLA
160TAX
170PLA
180JMP&DC93
190RTS:]NEXT
200osword=&FFF1:osurch=&FFEE
210FORpass%=0TO2STEP2:P%=&2CE0
220[OPTpass%
230.output
240 LDY#0:.loop1
250LDA(&70),Y
260JSRosurch
270INY
280CPY#9
290BNEloop1
300LDA&99
310BEQfast
320JSRdelay
330.fast
340LDA&79
350BNEdead
360BEQalive
370.dead:RTS
380.alive
390LDA&7F
400BNEcomopp
410JSRinput
420JMPoutput
430.comopp
440JSRplayer
450JMPoutput
460.player
470LDA&7C
480BNElogic
490JMPinput
500.logic
510LDA&D06
520STA&87
530LDA&D07
540STA&8A
550LDA&D08
560STA&8B
570LDA&D09
580STA&8C
590LDY&7D
600STY&7E
610LDA(&72),Y
620JSRkeys
630LDA&79
640BNEch1
650JSRlim
660LDA&75
670BEQokay
680.ch1
690LDA&89
700STA&D06
710LDA&8A
720STA&D07
730LDA&88
740STA&D08
750LDA&8C
760STA&D09
770LDY&7C
780LDA&BFF,Y
790STA&7D
800TAY
810LDA(&72),Y
820JSRkeys
830LDA&79
840BNEch2
850JSRlim
860LDA&75
870BEQokay
880.ch2
890LDA&89
900STA&D06
910LDA&8A
920STA&D07
930LDA&88
940STA&D08
950LDA&BC
960STA&D09
970LDY&7E
980LDA&C03,Y
990STA&7D
1000TAY
1010LDA(&72),Y
1020JSRkeys
1030.okay
1040JSRsound
1050JSRnext
1060RTS
1070.input
1080LDX#2:.loop
1090LDA&8D,X
1100 LDY#4:.loop2
1110CMP(&72),Y
1120BEQout
1130DEY
1140BNEloop2
1150DEX:BNEloop
1160BEQover
1170 .out
1180LDX&7C
1190STA&74,X
1200 .over
1210LDX&7C
1220LDA&74,X
1230JSRkeys
1240JSRsound
1250JSRnext
1260RTS
1270.next
1280LDA&7C
1290EOR#1
1300STA&7C
1310LDA&70
1320EOR#10
1330STA&70
1340LDA&72
1350EOR#60
1360STA&72
1370LDA&77
1380EOR#2
1390STA&77
1400LDA&7A
1410EOR#4
1420STA&7A
1430RTS
1440.keys
1450.a:LDY#4
1460CMP(&72),Y
1470BNEb
1480LDY#0
1490JSRaddition
1500.b:DEY
1510CMP(&72),Y
1520BNEc
1530LDY#0
1540JSRsubtraction
1550.c:DEY
1560CMP(&72),Y
1570BNEd
1580LDY#2
1590JSRaddition
1600.d:DEY
1610CMP(&72),Y
1620BNEfin
1630LDY#2
1640JSRsubtraction
1650.fin
1660RTS
1670.addition
1680LDA(&77),Y
1690CLC
1700ADC#4
1710STA(&77),Y
1720INY
1730LDA(&77),Y
1740ADC#0
1750STA(&77),Y
1760JSRcheck
1770RTS
1780.subtraction
1790LDA(&77),Y
1800SEC
1810SBC#4
1820STA(&77),Y
1830INY
1840LDA(&77),Y
1850SBC#0
1860STA(&77),Y
1870JSRcheck
1880RTS
1890.sound
1900LDX&7A
1910LDY&7B
1920LDA#7
1930JSRosword
1940LDY#4
1950LDA(&7A),Y
1960LDY#8
1970EOR(&7A),Y
1980LDY#4
1990STA(&7A),Y
2000RTS
2010.check
2020LDX&77
2030LDY&78
2040LDA#9
2050JSRosword
2060LDY#4
2070LDA(&77),Y
2080 STA&79
2090RTS
2100.lim
2110LDA#0
2120STA&75
2130LDA&D07
2140CMP&81
2150BNEbr1
2160LDA&D06
2170CMP&80
2180BNEbr1
2190INC&75
2200RTS
2210.br1
2220LDA&D07
2230CMP&85
2240BNEbr2
2250LDA&D06
2260CMP&84
2270BNEbr2
2280INC&75
2290RTS
2300.br2
2310LDA&D09
2320CMP&83
2330BNEbr3
2340LDA&D08
2350CMP&82
2360BNEbr3
2370INC&75
2380RTS
2390.br3
2400LDA&D09
2410CMP&87
2420BNEbr4
2430LDA&D06
2440CMP&86
2450BNEbr4
2460INC&75
2470.br4
2480RTS
2490.delay
2500LDX&99
2510.dloop1
2520LDY#128
2530.dloop2
2540NOP
2550DEY
2560BNEdloop2
2570DEX
2580BNEdloop1
2590RTS
2600RTS:]NEXT
2610?&204=9:?&205=&C
2620ENVELOPE1,3,0,0,0,0,0,0,121,-10,-5,-2,120,120:f%=0
2630MODE7:VDU141:PRINTSPC(10)"LASER CYCLES":VDU141:PRINTSPC(10)"LASER CYCLES"
2640PRINTTAB(4,3)"Will you challenge the computer(1)       or another human(2)?"
2650REPEAT:g%=GET:IFg%=49 OR g%=50 UNTIL1 ELSE UNTIL0
2660IFg%=50 ?&7F=0:PRINT"Red bike:UP=1  DOWN=Q  LEFT=Z  RIGHT=X":PRINT''"Blue bike:UP=;  DOWN=[  LEFT=>  RIGHT=?"
2670IFg%=49 ?&7F=1:PRINT"Blue bike:UP=;  DOWN=[  LEFT=>  RIGHT=?":REPEAT:INPUT''"Enter difficulty factor 1-10 easy-hard       "f%:IF f%>10 OR f%<1 UNTIL0
2675f%=10-f%:f%=f%*4
2690REPEAT:INPUT"Enter speed factor 1-10 slow-fast            "s%:IF s%<1 OR s%>10 UNTIL0
2700UNTIL1:?&99=10-s%
2710PRINT''SPC(10)Press SPACE":REPEATUNTILGET=32
2720r%=0:b%=0:REPEAT:MODE1
2730PROCinit
2740VDU19,0,7,0,0,0,19,2,4,0,0,0,19,3,5,0,0,0
2750GCOL0,3:FORY%=0TO1024STEP20:MOVE10,Y%-20:DRAW10,Y%:DRAW0,Y%:MOVE1270,Y%-20:DRAW1270,Y%:DRAW1280,Y%:MOVE10,Y%:NEXT
2760FORX%=0TO1280STEP20:MOVEX%-20,10:DRAWX%,10:DRAWX%,0:MOVEX%-20,1000:DRAWX%,1000:DRAWX%,1020:MOVEX%,10:NEXT
2770CALL&2CE0
2780SOUND0,1,5,100:FORI%=0TO15:VDU19,0,I%,0,0,0:NEXT:VDU19,0,7,0,0,0
2790IF?&70=1COLOUR1:PRINTTAB(8,10)"Red warrior is the victor":r%=r%+1:ELSECOLOUR2:PRINTTAB(8,10)"Blue warrior is the victor":b%=b%+1
2800COLOUR1:PRINT'SPC(8)"RED=";r%;:COLOUR2:PRINTSPC(8)"BLUE=";b%
2810TIME=0:REPEATUNTILTIME>200
2820COLOUR3:PRINTSPC(4)"Another contest?":*FX15,1
2830G=GET
2840IFG<>78 PROCinit:UNTIL0
2850IFr%>b% COLOUR1:PRINT"    Red warrior is triumphant!"
2860IFr%<b% COLOUR2:PRINT"   Blue warrior is triumphant!"
2870IFr%=b% PRINTSPC(9)"Contest is a draw"
2880END
2890DEFPROCinit
2900RESTORE2980
2910FORi%=0TO19:READ?(&D01+i%):NEXT
2920FORi%=0TO7:READ?(&D20+i%):NEXT
2930FORi%=0TO17:READ?(&D30+i%):NEXT
2940FORi%=0TO14:READ?(&70+i%):NEXT
2950FORi%=0TO7:READ?(&C00+i%):NEXT
2960FORi%=0TO7:READ?(&80+i%):NEXT
2970?&7D=RND(4):?&80=?&80+f%:?&82=?&82+f%:?&84=?&84-f%:?&86=?&86-f%
2980DATA18,0,1,25,69,127,2,128,1,0,18,0,2,25,69,128,2,128,2,0
2990DATA144,176,225,194,184,248,231,232
3000DATA0,0,&F8,&FF,4,0,0,0,1,0,0,&F8,&FF,5,0,0,0,1
3010DATA&08,&0D,&23,&0D,248,194,0,&10,&0D,0,&39,&0D,0,3,3
3020DATA3,4,2,1,4,3,1,2
3030DATA1,0,8,0,227,4,232,3
3040ENDPROC
```

First ADA

Program *The ADA Training Course* **Price** £49.99 **Micro** Commodore 64 (+Disc Drive) **Supplier** First Software, Unit 20B, Horseshoe Road, Pangbourne, Berks.

There are said to be people who have never heard of ADA. There are also said to be people who wished that they never had.

ADA is the language officially adopted by NATO for use on all real-time systems for the 1990s and beyond, such as command and control systems, communications, and automatic defence.

One of the major problems with ADA is that although most of it has been defined on paper the language is very difficult to implement on existing hardware. In fact the only full implementations of the vital ADA compiler are test versions on very powerful and very secret mainframes.

So, an ADA compiler on the Commodore 64 was not the sort of package I ever expected to see. Who would even think of writing a compiler for a 64K micro when the big boys are having trouble getting it on a mainframe? Volker Sasse of Data Becker (West Germany), that's who — and he's done a good job too.

The software consists of an editor to write the ADA programs, a three-stage compiler (actually two programs) which converts the ADA into assembler language, an assembler for final conversion of the program into machine code, and a disassembler. Both the assembler and disassembler are stand-alone utilities which you can also use for your non-ADA efforts.

As an introduction to the language part of ADA the package works very well. The manual is written clearly, in the main, and takes you step by step through the use of the ADA editor and compiler whilst also guiding you on your first steps into the intricacies of ADA itself. However, although ADA is potentially a very powerful language it is also very complex and the ADA Training Course (translated from the original German by First Software) falls short of explaining many of the principles of ADA. It tends to concentrate on the workings of the compiler itself. You would be well advised to get hold of an ADA text book as well.

```
10 with TEXT_IO; use TEXT_IO;              -- Chain with I/O routines
20 with CBM_64; use CBM_64;                -- and special C64 fnctns
30 procedure ADA is                        --
40    NUMBER : FLOAT;                      -- Declare variables to be
50    N_CALC : FLOAT;                      -- used in program
60    TMP_1 , TMP_2 , TMP_3 , TMP_4 : FLOAT;
70 begin                                   -- Start ADA routine
80    SCREEN_CLR;                          -- Clear screen
90    for N in 1..1000 loop                -- Start loop
100     NUMBER := FLOAT ( N );             -- Transfer integer to real
110     if N < 501 then                    -- Perform calculation
120       TMP_1 := NUMBER + 0;             --
130     else                               --
140       TMP_1 := 500;                    --
150     end if;                            --
160     TMP_2 := NUMBER * TMP_1;           -- N_CALC=INT(TMP_1*
170     TMP_3 := LOG ( NUMBER );           --    NUMBER*LOG(NUMBER) )
180     TMP_4 := TMP_2 * TMP_3;            --
190     N_CALC := INT ( TMP_4 );           --
200     NEW_LINE;                          -- Print NUMBER and N_CALC
210     PUT ( N );                         --
220     PUT ( " " );                       --
230     PUT ( N_CALC );                    --
240   end loop REPT;                       -- End of loop
250   SCREEN_CLR;                          --
260   PUT ( "FINISHED" );                  --
270 end ADA;                               -- End
```

Listed here is an example ADA program which goes round a loop 1000 times and performs one of two simple calculations each time round, printing as it goes.

Note that the individual expressions used are very simple: the compiler cannot even multiply three numbers together in one go. Also note the rather weird form required for line 120. The final compiled program runs rather a little more quickly than a comparable Basic one, though. It is not a particularly good improvement for what is in effect a machine-code program, especially when the Basic program can be optimised to perform the same function in around 95 seconds.

To be fair on ADA though it is the printing to screen which takes time and the compiler has to call the C64 Kernal for the maths routines and thus produces inefficient code.

To sum up, the ADA Training Course gives a low-level introduction to ADA and provides a very cheap means of gaining vital hands-on experience. The compiler provided offers only a very stripped-down version of the language but is interesting none the less. A lot of disc operations are required to compile a single program, which makes the compiler slow to use, and prone to the usual Commodore disc-loading malaise of hanging up from time to time.

Also, it seems to be very easy for beginners to make mistakes which can appear anywhere.

Interesting but probably for experienced programmers only.

John Cochrane

Joust a minute

Program *Sir Lancelot* **Micro** CPC 464 **Price** £6.95 **Supplier** Melbourne House, Castle Yard House, Castle Yard, Richmond TW10 6TF.

The biggest thing *Sir Lancelot* had going for it on the Spectrum was that it ran in 16K which was great news for the people who hadn't been driven to upgrade by a dearth of software. It was also very well done, even if the sheer number of platform games tended to make you cringe at the thought of another.

On the CPC the question of memory is irrelevant, but the fact that it is still well programmed isn't. There is not, as yet, the mind-numbing quantity of such games released for the Amstrad machines and *Lancelot* is one of the most enjoyable I have played.

The movement and animation are extremely fast and smooth and, despite being in 16 colour mode the graphics avoid looking crude and chunky. All your extra lives are seen dancing at the bottom of the screen, as in *Manic Miner*, but as each of these is killed off the speed of the remaining sprites increases dramatically, so that by the last life everything on screen is going positively berserk, a bit like old *Space Invaders* games.

There are 24 screens, each of which can be reached directly from screen 1, which will be a very welcome feature for those who are not adept at such games. The only drawback is that, whilst attractive on the colour monitor, it is unplayable on the green screen because of invisible objects, colour clashing etc. This forces you to try and get some time using the TV – a nightmare I'm sure all Amstrad owners are easy glad to have left behind.

Tony Kendle

Ee ba gum!

Program *Mr EE* **Price** £6.95 **Micro** BBC B **Supplier** Micro Power Ltd., Sheepscar House, Sheepscar Street South, Leeds LS7 1AD

Micro Power have another hit game on their hands – why? Because it's an arcade game that's neither impossible to learn nor so easy you leave the cat to play after the first ten minutes – and it has decent music!

True it seems tricky when you read the instructions, but in fact you have to run your character around the screen to eat cherries while avoiding the bad guys or arranging for apples to fall on their heads. (There's nothing dramatically new in the game – *PacMan*'s offspring are everywhere.) You can develop simple, ef-

fective strategies after a few plays There are – they tell us – ten screens and you can choose to play for a high score or to zip through all the screens at high speed Sadly there's no hall of fame to allow you to battle with other scores on other people

You can use keys or joysticks, the sound can be turned off if it drives everyone mad and you can pause to answer the phone. All in all good fun, good value and just the thing to work off energy after the exams

Dave Watson

Heads win

Program *Operation Caretaker* **Price** £8 95 **Micro** Spectrum/Amstrad **Supplier** Global Software, 33 Shalgate Road, London SW11 1BA

Azimuth adjustment – altering the tape-head alignment to improve loading – seems to be the in thing at the moment

Following Interceptor's release for the Amstrad a short while ago is this package released by Global.

In the package you get an azimuth adjustment tape, a screwdriver and a head cleaning tape Unlike the Interceptor product there is no free game with the package

Whilst the logic of the package for Amstrad owners is obvious, indeed essential, I immediately snickered at the idea of a package being released for other machines since they do not have standard tapes and there was no guarantee that the screwdriver would fit at all.

However, I was more impressed when I found that it fitted all five recorders I have access to

Even if you are unlucky and have to find a screwdriver that fits your deck yourself the software is worth having The system it uses seems more straightforward than Interceptor's Instead of having pointers laid out over the tape deck which tell you the extreme angles of the tolerance of the head, Global's package produces a bar chart on screen that tells you when the reading is good or poor They do admit, though, that for that final 5% accuracy some sort of pointer should be used as well.

The most important point is that I was absolutely stunned by the improvement it produced – almost all the blasted turbo loaders I couldn t get to work went in first time – and as an added bonus, your hi-fi will never sound better

I regard it as an essential purchase **Tony Kendle**

Barrels

Program *Gatecrasher* **Micro** CPC 464 **Price** £8.95 **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex, CM14 4EF

This is a conversion of a game released by Quicksilva for almost every machine that was around at the time It is more of a logic testing game than one requiring quick reflexes

The object is to roll barrels down various holes in the ground so that they follow the ledges and gates and arrive in containers at the bottom

The idea is to fill the nine boxes with one barrel each, although the objectives get more complex as the game progresses The game therefore relies on you choosing the correct hole to let your barrel off

As it hits one of the gates the gate spins to face in a different direction, causing subsequent barrels to rebound in different ways You can scroll the ledges in an attempt to make things connect in the way you want, or if things are really hopeless you can cause an earthquake that can disturb all the gates

It's an easier game to play, or at least to get into, than it is to describe It becomes very much a 'just one more go' or 'I'll just finish this screen' session and you could easily sit up until the small hours with it A refreshingly original game.

Tony Kendle

Dancin!

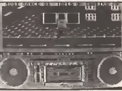
Program *Ghetto Blaster* **Price** £8 95 **Micro** Commodore 64 **Supplier** Virgin Games Ltd., 2-4 Vernon Yard, 119 Portobello Road, London W11 2DX.

Virgin's latest release, *Ghetto Blaster*, is just what you would expect from one of the country's leading record companies – a game based on music

All the action revolves around Rockin Rodney and his "powerful playback" ghetto blaster He has got himself a job as messenger for the record company Interdisc. On this particular day, he has to collect ten demo-tapes from around the town and deliver them to Interdisc's main office on Funky Street It's also part of Rodney's job to "turn the locals on" to his sounds and get them dancing There's a map included with the instructions showing all the streets in Funkytown and believe me, it comes in very useful. While Rodney patrols the streets he has to avoid some pretty mean dudes like the tone-deaf walkers and the gangsters of the groove.

The main feature of this program is the funky soundtrack with its twelve separate tunes, which is certainly very good The thing that caught my eye was the layout and presentation of the game Both were excellent. However, I'm not so sure about the 'lastability' of *Ghetto Blaster* Still, it's an original idea for a game.

Tom Hussey



Assassin

Program *Assassin* **Price** £9 95 cassette, £11 95 disc – 40 or 80 track. **Micro** BBC **Supplier** Robico Software, 3 Fairland Close, Llantrisant, Mid-Glamorgan CF7 8QH

How good it is to find an adventure game with style and quality Robico produce some nifty numbers and *Assassin* is first rate.

It is a text adventure in which you play Nick Hanson, special agent, and your first task is to discover your task! As you travel through a beautifully described landscape starting in a decaying railway station, you receive instructions in a variety of ways. You're always in danger of being bumped off yourself – so it pays to be careful and quick

The text compression system is efficient and the game understands quite tricky commands You can combine two commands in one sentence – an advance most adventurers will appreciate Sensible options include coloured text or b/w, a chance to save the game and a helpful command list

Best of all there's no sense of being cheated. unlike other adventures where random chances and downright perversity often rule

Jan Watterson

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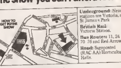
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Play the market

Just in case you haven't sold those BT shares yet, try this microdrive based program by ***Peter Shaw***

This *Share Portfolio* was primarily designed for those people who, like myself, purchased British Telecom shares and wanted to record and subsequently display graphically how they were doing in the Stock Market. However, it can be used to retain information of up to 15 other shares, if required.

A description of the various Menu Options is as follows. *Option One* captures basic information regarding the share, ie, Name of share (limited to 18 characters). Purchase price. Date when purchased. "High" and "Low" price with associated dates. Number of shares purchased and a share reference to be subsequently used for loading and saving share detail. *Option Two* is a Data Entry Module, where you are requested to answer questions Share Price and Date of Share Price. If the share price is either higher or lower than either of the ones previously recorded, the display will be updated and the new "High/Low" values with their associated dates will be recorded. In order to see how your shares are faring, it will also display the current Gross Profit/Loss, after entry of the price.

Option Three displays the share graph. You will be requested to enter a "Pause" factor. The value (50=1 second) determines the speed at which the share price data will be plotted. Upon entering the value, a base line will be drawn, which is mid-point to the screen, from which all subsequent plotting will be performed. Before plotting commences you have the option of moving the base line either up or down the screen, just in case your share rockets up or plumets down. If you move the base line, the final position will not have to be subsequently repositioned next time the graph is displayed, as the value of the position will have been recorded. Whilst you view the graph being plotted, your attention will be drawn if and when a new "High/Low" value is achieved. It will also display the current price with associated dates.

Option Six will display your portfolio. Use this option when you want a quick look at the current situation of your share/s. It will display, amongst other details, the current price together with whatever associated profit of loss.

Options Four and *Five* – saving and loading share prices – are fully explained on screen.

Finally *Option Seven* is a facility to use if you only want a quick look at your Portfolio or perhaps determine a Share Reference for subsequent loading of a share.

If you are using *Share Portfolio* for the first time you must use Option 1 as this sets up the initial Share Portfolio. Answer "Y(es)" to the initial question "is it first time to set up any Share". After using Option 1, go to Option 2 and enter share price details. After entering share details go to Option 4 (Save Share Prices).

You are now set up for all subsequent updating and creating, if desired, new share details. Should the program for some unforeseen reason stop, type in "GOTO 10" and the program will be restored and will return you to Menu.

Program Notes

The maximum number of share prices you can retain within a Share file is 80, as each "plot" or a price is 3 pixels. When you come to enter the 80th price, the program will warn you of this, and give the necessary instructions (Line 2010), of what course of action to take.

If you want to only view your Portfolio (Option 6) you must use Option 7 (Load Portfolio File) first.

When you "Save" your first share file, three Data files are created, each bearing the same "Share Reference", but suffixed with the letters "A", "B" & "C" eg, if File Ref was "*BTT*" first file would be "*BTT A*" etc. Each of these three files is to hold the data stored in the *N$*, *P* and *Q$* arrays.

In addition to these three files, two other files are automatically created, which are called "Portfolio" and "Portfolios". These files contain the data, as the name suggests, for the Portfolio file and are contained within the Data Arrays *P$* and *R*.

```
   1 REM ************************
   2 REM *WHEN PROGRAM ENTERED *
   3 REM *        SAVE BY      *
   4 REM * "SAVE*"M";1;"NAME"  *
   5 REM *        LINE 10      *
   6 REM ************************
  10 PAPER 7: INK 0: FLASH 0: BORDER 7: CLS
  11 NUMBER 3
  15 PRINT AT 2,0; BRIGHT 1; INVERSE 1;"SHARE PORTFOLIO"
  20 PRINT : PRINT AT 4,0;"1 SET UP NEW SHARE";AT 5,0;"2 ENTER SHARE PRICES";AT 6,0;"3 DISPLAY SHARE GRAPH" AT 7,0;"4 SAVE SHARE PRICES";AT 8,0;"5 LOAD SHARE DATA";AT 9,0;"6 DISPLAY PORTFOLIO";AT 10,0;"7 LOAD PORTFOLIO FILE";AT 11,0;"8 STOP PROGRAM"
  30 PRINT AT 18,7; OVER 1; PAPER 6;"PRESS NUMBER OF YOUR CHOICE": PAUSE 25: IF INKEY$="" THEN GO TO 30
  33 LET Z$=INKEY$
  34 LET Z=VAL Z$
  35 IF Z<1 OR Z>8 THEN BEEP .1,-30: GO TO 30
  40 IF Z=8 THEN STOP
  50 GO TO Z*1000
1000 CLS : PRINT AT 10,0;" IS THIS FIRST TIME TO SET UP          ANY SHARE ?"
1002 INPUT "PLEASE ENTER Y/N ";Z$
1004 IF Z$="" THEN GO TO 1002
1008 IF Z$="Y" OR Z$="y" THEN DIM P$(16,15): DIM R(15): REM ****SET UP FOR PORTFOLIO****
1010 CLS : DIM R(12): DIM N$(90,6): DIM P(10): DIM Q$(6,13): 15: LET SD=0: LET B$(5)="00": BORDER 1
1012 PRINT BRIGHT 1;AT 1,0;"
        "
1014 PRINT BRIGHT 1;AT 30,0;"
        "
1016 PRINT BRIGHT 1; OVER 1;AT 25,10;"SHARE PROFILE"
1018 INPUT AT 22,0;AT 7,2;"SHARE        "; LINE Q$(1);AT 8,2;"PURCH PRICE ";p(1);AT 9,2;"DATE DDMMYY"; LINE Q$(2) ... "HIGH" PRICE ";p(2);AT 11,2;"LOW" PRICE ";p(3);AT 12,2;"NO OF SHARES ";p(4);AT 13,2;"SHARE REF   "; LINE Q$(3);AT 19,2;"IS THIS CORRECT Y/N "; LINE Z$
1020 IF Z$="N" OR Z$="n" THEN GO TO 1000
1170 GO TO 10
1990 STOP
1997 REM ************************
1998 REM ** SHARE PRICE ENTRY **
1999 REM ************************
2000 CLS
2005 GO SUB 9010
2010 IF RC>=80 THEN CLS : PRINT AT 3,0; INVERSE 1;"IMPORTANT NOTICE"; INVERSE 0;AT 6,0;"NO MORE PRICE CAN BE STORED" "UNDER FILE REF ";: FLASH 1;N$ ... 25 " FLASH 1;"SAVE THIS FILE" FLASH 1;"AFTER YOU HAVE PRESSED ANY KEY" "YOU WILL BE RETURNED TO MENU" "CREATE A NEW FILE (OPTION 1) 1.E" "IF ORIGINAL FILE REF BTI WAS" "NEW FILE BTI2": PAUSE 4E4: GO TO 10
2040 NUMBER 1
  [illegible] TO 90
2090 IF p(1)... TO 1+33 ... : STOP : LET length=... TO 3000
2094 NEXT j
3000 PRINT AT 3,16-INT (length/2); PAPER 2; ... (1 TO length)
2095 PLOT 4,4: DRAW 0,167: DRAW 199,-4: DRAW ... 7: DRAW -247,0
2095 PLOT 12,92: DRAW 0,40: DRAW 112,-4: DRAW ... 4: DRAW -112,0
2095 PLOT 132,92: DRAW 0,40: DRAW 112,-4: DRAW ... 4: DRAW -112,0
2095 PLOT 12,44: DRAW 0,44: DRAW 112,-4: DRAW ... 4: DRAW -112,0
2095 PLOT 132,52: DRAW 0,52: DRAW 112,-4: DRAW ... 52: DRAW -112,0
2097 PLOT 4,34: DRAW 247,-0
2098 PLOT 76,4: DRAW 0,28: PLOT 132,4: DRAW 0,...
2100 PRINT AT 1,2;"DATA ENTRY MODULE"
2114 PRINT AT 6,2;"HIGH";AT 6,10;"DATE";AT 6,... "LOW";AT 6,23;"DATE"
2120 PRINT AT 7,2;"PRICE";AT 7,8;"DDMMYY";AT 7,... "PRICE" AT 7,23;"DDMMYY"
2125 PRINT AT 11,3;"LAST UPDATE";AT 11,17;"DATE DETAIL";AT 12,5;"DDMMYY"
2135 FOR i=12 TO 16: PRINT PAPER 3; ... ;i,17;TAB 30: NEXT i
2140 PRINT AT 13,23;"DDMMYY";AT 14,4;"PRICE";AT 14,17;"DATE";AT 14,17;"PRICE"
2150 PRINT AT 16,1;"PURCHASE";AT 18,11;"NO OF" ... 0,10;"CURRENT GAIN"
2160 PRINT AT 19,2;"PRICE";AT 19,10;"SHARES";AT 19,... 20;"OR LOSS";AT 20,20;"£"
2170 IF RC>1 THEN GO SUB 2600
2180 IF RC<1 THEN GO SUB 2300
2305 FOR j=RC TO 90
2306 IF RC>=80 THEN GO TO 2010
2310 INPUT "Date DDMMYY or Menu "; LINE Y$
2315 IF LEN Y$<>6 AND CODE Y$(1)<>77 AND CODE Y$(1)<>109 THEN STOP : GO TO 2310
2320 IF CODE Y$(1)=77 OR CODE Y$(1)=109 THEN GO TO 10
2322 IF CODE Y$(1)<48 OR CODE Y$(1)>51 THEN GO TO 2310: REM ERROR
2325 IF CODE Y$(2)<48 OR CODE Y$(2)>57 THEN GO TO 2310: REM ERROR
2328 IF VAL Y$(3 TO 4)<1 OR VAL Y$(3 TO 4)>12 OR VAL Y$(... THEN GO TO 2310: REM ERROR
2330 LET n$(j)=Y$
2332 LET N$(7)=N$(j)
2334 LET Z=VAL N$(j,3 TO 4)
2335 PRINT PAPER 1; INK 9;AT 15,5;n$(j,1 TO 2) ... (j,2+2+1-3 TO 2+3);N$(j,5 TO 6);AT 14,23;n$(j,... 2);N$(j,2+3+1-3 TO 2+3);N$(j,5 TO 6)
2338 INPUT "Enter share price "; LINE Y$
2340 IF CODE Y$<48 OR CODE Y$>57 THEN GO TO 2...
2342 LET p(j)=VAL Y$
2342 PRINT PAPER 1; INK 7;AT 15,7;p(j);" "( ... -LEN STR$ p(j))
2343 PRINT PAPER 1; INK 7;AT 14,24;p(j);" "( ...
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```
3-LEN STR$ p(j))
2344 INPUT "IS THIS CORRECT (Y/N)? ";z$
2346 IF z$="" THEN GO TO 2310
2347 IF Z$="N" OR Z$="n" THEN PRINT AT 19,28; PAP
ER 5;"      ";AT 16,30;"   ": GO TO 2300: REM FROM
3R
2277 PRINT AT 16,24; PAPER 5; INK 7;p(j);" "( TO
3-LEN STR$ p(j))
2250 LET P(8)=P(3)
2260 IF p(j)>high THEN LET high=p(j): LET Z=VAL M
$(j,3 TO 4): LET P(5)=P(3): LET M$(5)=M$(j): BEEP
 .1,30: PRINT AT 4,3; INVERSE 1; BRIGHT 1; PAPER 7
;high;" "( TO 3-LEN STR$ high);AT 4,6; INVERSE 1;
 BRIGHT 1; PAPER 7 ;M$( ,1 TO 2);M$(j,Z*3+1-3 TO Z*
3);M$(j,5 TO 6): PAUSE 100
2270 IF p(j)<low THEN LET low=p(j): LET Z=VAL M$(
j,3 TO 4): LET P(6)=P(3): LET M$(6)=M$(j): BEEP .1
,30: PRINT INVERSE 1; BRIGHT 1; PAPER 7;AT 9,28;
 BRIGHT 1; PAPER 7;low;AT 9,23;M$(j,1 TO 2);M$(j,Z
*3+1-3 TO Z*3);M$(j,5 TO 6): PAUSE 100
2550 LET PL=INT ((P(3)-P(1))*P(4))/100)
2995 PRINT INVERSE 1; BRIGHT 1;AT 20,20;PL;" "( 
TO 3-LEN STR$ PL)
2400 LET RC=RC+1
2410 LET P(7)=RC
2450 NEXT j
2460 STOP
2500 REM ************************
2500 REM **     1ST ENTRY     **
2501 REM ************************
2510 LET Z=VAL M$(1,3 TO 4): PRINT AT 4,3 P(2);AT
4,6;M$(1,1 TO 2);M$(1,Z*3+1-3 TO Z*3);M$(1,5 TO 6)
;AT 9,3 P(3);AT 9,23;M$(1,1 TO 2);M$(1,Z*3+1-3 TO
 Z*3);M$(1,5 TO 6);AT 13,6; FLASH 1;"FIRST";AT 15,
4;"ENTRY": LET P(6)=P(3): LET P(5)=P(2): LET HIGH=
P(2): LET LOW=P(3)
2520 PRINT AT 20,3;P(5);AT 20,12;P(4);AT 20,20;"*"
: PAUSE 200: PRINT AT 13,6;"     ";AT 15,4;"     "
2525 LET RC=10
2530 RETURN
2532 STOP
2600 REM ************************
2601 REM * 2ND & SUBSEQUENT   *
2602 REM *      ENTRIES       *
2603 REM ************************
2610 IF P(5)<P(2) OR P(5)=P(2) THEN LET Z=VAL M$(
1,3 TO 4): PRINT AT 4,3;P(2);AT 4,6;M$(1,1 TO 2);M
$(1,Z*3+1-3 TO Z*3);M$(1,5 TO 6): LET HIGH=P(2)
2620 IF P(5)>P(2) THEN LET Z=VAL M$(5,3 TO 4): PR
INT AT 4,3;P(5);AT 4,6;M$(5,1 TO 2);M$(1,Z*3+1-3 T
O Z*3);M$(5,5 TO 6): LET HIGH=P(5)
2630 IF P(6)<P(3) THEN LET Z=VAL M$(6,3 TO 4): PR
INT AT 9,10;P(6);AT 9,23;M$(6,1 TO 2);M$(1,Z*3+1-3
 TO Z*3);M$(6,5 TO 6): LET LOW=P(6)
2640 IF P(6)>P(3) THEN LET Z=VAL M$(1,3 TO 4): PR
INT AT 9,10;P(3);AT 9,23;M$(1,1 TO 2);M$(1,Z*3+1-3
 TO Z*3);M$(1,5 TO 6): LET LOW=P(3)
2645 LET Z=VAL M$(7,3 TO 4): PRINT AT 13,5;M$(7,1
 TO 2);M$(1,Z*3+1-3 TO Z*3);M$(7,5 TO 6);AT 15,7;P(
RC-1)
2650 PRINT AT 20,3;P(1);AT 20,12;P(4);AT 20,20;"*"
;AT 20,23;INT ((P(RC-1)-P(1))*P(4))/100)
2660 RETURN
2997 REM ************************
2998 REM * DISPLAY GRAPH ROOM *
2999 REM ************************
3000 PAPER 7: BORDER 7: CLS
3002 BORDER 1
3010 LET HIGH=P(2): LET LOW=P(3)
3030 FOR j=1 TO 50
3040 IF p$(j,1 TO j+1)="  " THEN LET length=j: GO
 TO 3100
3090 NEXT j
3100 PRINT TAB 16-INT (length/2); PAPER 2; INK 7;b
$(1,1 TO length)
3120 LET p(0)=0: LET entries=0
3140 PRINT INVERSE 1; BRIGHT 1; PAPER 7;AT 0,0;"B
F ";p(2);AT 1,0;"B ";p(4);AT 0,16;"BS ";p(2);AT 1
,20;"LO ";p(3)
3145 INPUT "Enter pause factor for plotting
    ";delay
3147 PRINT "0
3150 GO SUB 3700
3160 FOR j=10 TO RC-1
3165 LET Z=VAL M$(j,3 TO 4)
3170 PRINT AT 1,10; PAPER 1; INK 7;p(j);" "( TO 3
-LEN STR$ p(j));AT 2,16; PAPER 1; INK 7;M$(j,1 TO
 2);M$(j,Z*3+1-3 TO Z*3);M$(j,5 TO 6)
3178 LET end=p(j)
3200 LET start=p(j+1)
3210 IF p(j)>high THEN LET high=p(j): BEEP .3,-30
: PRINT AT 0,29; BRIGHT 1; PAPER 7;high;" "( TO 3
-LEN STR$ high): PRINT AT 0,29; BRIGHT 1; PAPER 7;
high
3220 IF p(j)<low THEN LET low=p(j): BEEP .3,-30:
PRINT INVERSE 1; BRIGHT 1; PAPER 7;AT 1,29;low;"
 "( TO LEN STR$ low): PRINT AT 1,29; BRIGHT 1; PAP
ER 7;low
3230 LET x=(end-start)
3240 IF entries=0 THEN GO SUB 3400
3250 IF entries>0 THEN DRAW INK 1;3,x: PAUSE de
lay
3260 LET entries=entries+1
3300 NEXT j
3290 PRINT #1; PAPER 2; INK 7;" END OF entries-Pr
ess any key ": PAUSE 0: GO TO 10
3400 IF entries=0 AND p(1)>p(1) THEN LET x=0: DRA
W INK 1;3,x: PAUSE 100: RETURN
3410 IF entries=0 AND p(1)>p(1) THEN LET x=p(j)-p
(1): PLOT 100,100: DRAW INK 1;3,x: RETURN
3420 IF entries=1 AND p(j)<p(1) THEN LET x=p(j)-p
(1): PLOT 100,100: DRAW INK 1;3,x: RETURN
3497 REM ************************
3500 REM ** ADJUST BASE LINE **
3499 REM ************************
3510 LET y=VAL B$(3)
3515 PLOT 0,3: DRAW 255,0: PLOT 0,3
3600 PRINT #1;"   KEYS 7(UP) 6 (DOWN) ANY OTHER  N
ORMAL KEY TO RETURN TO PLOT"
3630 LET a$=INKEY$
3640 IF a$="" THEN GO TO 3630
3650 IF VAL a$=7 THEN OVER 1: DRAW 1;255,0: PLOT 0
,y: LET y=y+1: PLOT 0,y: DRAW INK 1;255,0: LET y=y+
2: PLOT 0,y: GO TO 3630
3660 IF VAL a$=6 THEN OVER 1: DRAW 1;255,0: PLOT 0
,y: LET y=y-1: PLOT 0,y-2: DRAW INK 2;255,0: LET y=y-
2: PLOT 0,y: GO TO 3630
3670 LET B$(3)=STR$ y
3690 RETURN
3999 REM ************************
3000 REM **    SAVE DATA     **
3999 REM ************************
4001 GO SUB 9700
4100 CLS : PRINT AT 0,7; PAPER 2; INK 7;"DATA SAVI
NG MODULE";AT 10,1;"IS THIS FIRST TIME FOR ";: INK
 0; PAPER 7; FLASH 1;M$(2);AT 12,6; PAPER 2; INK 7;
 FLASH 0;"TO BE SAVED ? (Y/N)"
4600 PRINT #1;"PLEASE PRESS Y OR N ": PAUSE 4E4
4000 LET Z$=INKEY$
4000 IF Z$=CHR$ 98 OR Z$=CHR$ 121 THEN GO TO 4020
4001 CLS : PRINT AT 10,3; FLASH 1;"NOW ERASING OLD
 DATA FILES"
4000 ERASE "m";1;M$(2)+"A": ERASE "m";1;M$(2)+"B":
 ERASE "m";1;M$(2)+"C"
4019 PRINT AT 10,5; INVERSE 1;"OLD FILES NOW DELET
ED": PAUSE 100
4020 CLS : PRINT AT 4,8; FLASH 1;"NOW SAVING DATA"
4030 PRINT AT 6,5; FLASH 1;"DATA ARRAY M$() ";M$(2
)
4030 SAVE *"m";1;M$(2)+"A" DATA M$()
4040 PRINT AT 6,5; FLASH 0;"DATA ARRAY M$() ";M$(2
)
4050 PRINT AT 8,5; FLASH 1;"DATA ARRAY P() ";M$(2
)
4060 SAVE *"m";1;M$(2)+"B" DATA P()
4070 PRINT AT 8,5; FLASH 0;"DATA ARRAY P() ";M$(2
)
4080 PRINT AT 10,5; FLASH 1;"DATA ARRAY B$() ";M$(
2)
4090 SAVE *"m";1;M$(2)+"C" DATA B$()
4095 PRINT AT 10,5; FLASH 0;"DATA ARRAY B$() ";M$(
2)
4190 PRINT AT 15,9; FLASH 1; PAPER 2; INK 7;"ALL D
ATA SAVED": PAUSE 100
4200 CLS : INPUT "IS THIS ANY 1ST TIME PORTFOLIO
 IS TO BE SAVED Y/N? ";Z$
4225 IF Z$="" THEN GO TO 4200
4230 LET Y$=Z$(1)
4240 IF Y$="Y" OR Y$="y" THEN PRINT AT 10,0;"SAVI
NG PORTFOLIO FILES": SAVE *"m";1;"PORTFOLIO" DATA
P$(): SAVE *"m";1;"PORTFOLIOA" DATA R(): PRINT AT
10,0;"PORTFOLIO FILES SAVED UNDER     FILE NAMES";
AT 12,13; INVERSE 1;"PORTFOLIO" AT 13,13 "PORTFOLI
OA": STOP
4250 PRINT AT 10,0;"GOING TO ERASE OLD PORTFOLIO A
ND THEN GOING TO SAVE NEW DATA": ERASE "m";1;"PORT
FOLIO": ERASE "m";1;"PORTFOLIOA"
4260 PRINT AT 13,15; FLASH 1;"FILES ERASED": PAUSE
 100
4270 SAVE *"m";1;"PORTFOLIO" DATA P$(): SAVE *"m";
1;"PORTFOLIOA" DATA R()
4280 PRINT AT 13,15; FLASH 0; INK 2; PAPER 7;"FILE
S SAVED ": PAUSE 250: GO TO 10
4700 REM ************************
4701 REM ** SAVE PORTFOLIO DAT *
4702 REM ************************
4703 CLS : PRINT AT 1,6; PAPER 2: INK 7;"SAVE PORT
FOLIO MODULE"
4715 INPUT "ENTER TOTAL NUMBER OF FILES IN
PORTFOLIO ";C
4718 LET R(1)=C+0
4720 INPUT "ENTER WHAT NUMBER IS THIS SHARE WITHIN
 YOUR PORTFOLIO ";COUNT
4725 LET CNT=COUNT*5+1-5
4730 LET P$(CNT)=M$(2)
4750 LET P$(CNT+1)=B$(1)
4770 LET P$(CNT+2)=STR$ P(8)
4790 LET P$(CNT+3)=STR$ P(3)
4810 LET P$(CNT+4)=STR$ P(4)
4900 RETURN
3999 REM ************************
3000 REM **     LOAD DATA     **
3001 REM ************************
5010 CLS
5000 PRINT AT 10,0;"PLEASE ENTER NAME OF SHARE FIL
E REFERENCE  IF REFERENCE IS     LESS THAN 6 CHAR
ACTERS THEN     ENTER SPACES TO MAKE UP 6        CH
ARACTERS"
3030 INPUT "ENTER FILE REF ";F$
3035 IF LEN F$<6 THEN GO TO 3030
3000 PRINT AT 16,13; INVERSE 1;F$
3030 INPUT "IS THIS CORRECT Y/N ? ";Z$
3000 IF Z$="N" OR Z$="n" THEN GO TO 3000
5070 CLS
3095 GO SUB 9000
5000 PRINT AT 4,0; FLASH 1;"NOW LOADING FILES"
5090 PRINT AT 6,0; FLASH 1;"DATA FILE ";F$+"A"
5100 LOAD *"m";1;F$+"A" DATA M$()
5105 PRINT AT 6,0; FLASH 0;"DATA FILE ";F$+"A"
5120 PRINT AT 8,0; FLASH 1;"DATA FILE ";F$+"B"
5130 LOAD *"m";1;F$+"B" DATA P()
5125 PRINT AT 8,0; FLASH 0;"DATA FILE ";F$+"B"
5130 PRINT AT 10,0; FLASH 1;"DATA FILE ";F$+"C"
5140 LOAD *"m";1;F$+"C" DATA B$()
5142 PRINT AT 10,0; FLASH 0;"DATA FILE ";F$+"C"
5145 LET RC=P(7)
5146 LET P(1)=P(RC-1)
5150 DIM P$(60,15): DIM R(1)
5160 PRINT AT 12,0; FLASH 1;"PORTFOLIO FILES"
5170 LOAD *"m";1;"PORTFOLIO" DATA P$(): LOAD *"m";
1;"PORTFOLIOA" DATA R()
5250 PRINT AT 10,0; FLASH 1; INK 2; PAPER 7;"FILES
 ALL LOADED";AT 20,1;"NOW GOING TO   MENU": PAUSE
200: GO TO 10
5997 REM ************************
3000 REM ** DISPLAY PORTFOLIO *
5998 REM ************************
5000 CLS : PRINT AT 0,9; PAPER 2; INK 7;"SHARE POR
TFOLIO"
6010 PRINT INVERSE 1;AT 1,0;"REF";AT 1,7;"NAME";A
T 1,22;"N";AT 1,23;"PP";AT 1,29;"CP"
6016 LET N=1
6020 FOR J=1 TO R(1)
6030 PRINT TAB 0;P$(N,1 TO 7);TAB 7;P$(N+1,1 TO 13
);TAB 21;P$(N+2,1 TO 3);TAB 25;P$(N+3,1 TO 3);TAB
29;P$(N+4,1 TO 3)
6032 PRINT TAB 16; INVERSE 1;"PROFIT/LOSS "; PAPER
 7; INK 1;INT ((VAL P$(N+4)-VAL P$(N+3))*VAL P$(N
+2))/100
6035 LET N=N+5
6036 IF N>R(1) THEN GO TO 6100
6000 NEXT J
6100 PRINT #1; PAPER 2; INK 7;"  PRESS ANY KEY TO
GO TO MENU   ": PAUSE 4E4
6100 GO TO 10
6970 REM ************************
6900 REM **  LOAD PORTFOLIO  **
3000 REM ************************
7004 DIM P$(60,15): DIM R(1)
7010 CLS : PRINT AT 10,2;"LOADING PORTFOLIO DATA F
ILES"
7020 LOAD *"m";1;"PORTFOLIO" DATA P$(): LOAD *"m";
1;"PORTFOLIOA" DATA R()
7030 PRINT AT 10,1; FLASH 1;"PORTFOLIO DATA FILES
NOW LOADED": PAUSE 200
7040 GO TO 10
8001 REM ************************
8000 REM * DIMENSIONING ARRAYS*
8003 REM ************************
8005 DIM M$(90,6): DIM P(90): DIM B$(3,15): LET LE
NGTH=0
9010 DIM M$(1,36)
9020 LET M$(1)="JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVD
EC"
9000 RETURN
```

Memory breakdown

Check your memory on the QL with this multi-tasking utility written by ***John Lawlor***

This is a multitasking job for the QL called *Systat* The job gives a complete memory usage breakdown with a couple of novel features – use of the function keys to activate/deactivate the output and the restoration of the original screen contents upon deactivation, which considerably enhances the QL's windowing ability.

Information output includes Resident Procedure Area, Transient Program Area, Superbasic Area, Channels/Heaps Area, Resource Management/System Variables Area, Immediate Free Space, Total Memory Usage Largest Available Transient Program Area and Largest Available Heap Space

The first seven of these are calculable from Basic but the last two are only accessible via system traps and hence need machine code. Use of the program provides a useful insight into how QDOS executes memory management and is extremely useful when those *'Out of Memory'* messages appear when trying to load multitasking programs which require Heap space

The loader is fairly self-explanatory and, due to the large amount of Data statements, includes comprehensive error checking after every 16 bytes A very important point which is not documented anywhere is that the minimum data space you should allocate to a multitasking job appears to be about 256 bytes (line 1078) I first imagined that QDOS would require only enough room to save the registers, say 128 bytes. However, if you try altering the 256 to, say, 128 bytes, then *Systat* will apparently run perfectly – now do a *New* and after a few operations the QL will crash, sometimes giving an unstoppable ASCII dump of the Rom from address 0! The extra Data space must be for channel ID's etc, while a *New* is occurring.

After a successful loading a small window is opened in the top left hand corner of the screen containing the message *"F1 to Activate"* At this stage the program is running at the lowest possible priority – 1/127. Upon pressing function key *'F1'* three things happen.

1) The priority is increased to 64/127.
2) The contents of the screen where the main window will be opened are copied into a Heap area for eventual restoration This enhances the windowing features of the QL by leaving the screen intact after the job has been deactivated. If there is insufficient Heap space available then a warning message to this effect will be printed in the main screen window
3) The main screen output window is opened.

Output now commences with the Resident Procedure Area, the Transient Program Area, the Basic area, the channels/heaps area (any area allocated for the screen save will be deducted as this is released upon deactivation), the resource management/system variable area, the immediate free space (SV-BASIC-SV-FREE) and the total memory used including the screen but ignoring the temporary screen save area. The next statement is the largest available Transient Program area (MT-FREE, TRAP#1, D0=6) – note that this space is not necessarily there at the moment The last parameter, the largest available heap area, uses MT-ALCHP – Trap#1, D0=18 and attempts to obtain a heap area progressing from 582K (for those with the full 640K memory) in 1K steps until no error occurs At this point *Systat* decides if the area allocated is larger than the screen save area – if a screen save occurred, and also whether they are contiguous before deciding the largest available area. The heap space is then removed.

Finally, the message *'F5 to Deactivate'* appears; upon deactivation *Systat* restores the screen contents (if they were saved) releasing the *Heap* area used, restores its own priority to 1/127 and returns to waiting for *F1* to be pressed.

Systat as listed works in monitor Mode 4 but will also work in Mode 8 if you use <CTRL>F5 to control screen scrolling If you wish to patch the loader for TV mode, ie, move the output windows away from the origin 0,0 then answer *'Y'* to the patch prompt and follow the instructions

Once you start using *Systat* you will notice that QDOS lets the memory fill right up before doing any pruning For instance, load and then remove a Transient Program and note that the space is still allocated, ie, it isn't released as microdrive buffer storage! Memory reorganisation only occurs when something drastic happens such as a *New*, reset or memory overflow – and even then it will still sometimes persist with *Out of Memory* messages when you know better!

```
1000 REMark Systat Loader
1002 a=RESPR(1296)
1004 RESTORE 1211
1006 offset=0
1008 FOR n=11 TO 87
1010   chksum=0
1012   FOR a=1 TO 16
1014     READ byte
1016     POKE a+offset,byte
1018     offset=offset+1
1020     chksum=chksum+byte
1022   END FOR a
1024   READ chk
1026   IF chk<>chksum THEN PRINT "**** ERROR   Data Line 12
" n STOP
1028 END FOR n
1030 FOR n=1 TO 12
1032   READ byte
1034   POKE a+offset,byte
1036   offset=offset+1
1038 END FOR n
1040 FOR n=1 TO 12
1042   READ length
1044   POKE_W a+offset,length
1046   offset=offset+2
1048   READ message$
1050   FOR a=1 TO length
1052     POKE a+offset,CODE(message$(a))
1054     offset=offset+1
1056   END FOR a
1058 END FOR n
1060 chksum=0
1062 FOR n=1 TO 84
1064   READ byte
1066   chksum=chksum+byte
1068   POKE a+offset,byte
1070   offset=offset+1
1072 END FOR n
1074 READ chk
1076 IF chk<>chksum THEN PRINT "**** ERROR in final data at
statements" STOP
1077 patch
1078 SEXEC mdv1_systat,a,1296,256
1080 EXEC mdv1_systat
1211 DATA 96,14,0,0,0,0,74,251,0,6,83,89,83,84,65,84,929
1212 DATA 114,255,116,1,112,11,78,65,67,250,3,52,52,128,0,2
00,1496
1213 DATA 78,146,67,250,3,54,52,136,0,208,78,146,71,250,4,2
18,1749
1214 DATA 98,198,5,1,0,0,16,88,0,0,66,107,0,4,23,65,979
1215 DATA 0,6,23,124,0,2,0,7,112,17,78,65,12,1,0,2,449
1216 DATA 102,218,114,255,116,64,112,11,78,65,116,255,58,68
,0,0,1668
1217 DATA 55,48,112,24,78,65,67,250,4,104,74,128,103,6,18,1
98,1304
1218 DATA 6,0,96,42,18,198,0,1,73,250,3,50,40,136,96,124,10
57
1219 DATA 0,2,0,0,52,60,0,131,54,60,0,15,32,210,98,108,850
1220 DATA 81,203,255,250,213,252,0,0,0,64,81,202,255,236,67
,250,2409
1221 DATA 2,226,52,120,0,200,78,148,47,8,67,250,4,36,12,17,
1275
1222 DATA 0,1,103,14,52,130,0,208,67,250,2,226,78,146,97,0,
1364
1223 DATA 2,40,67,250,2,234,52,120,0,208,78,146,157,206,34,
57,1653
1224 DATA 0,2,198,32,146,185,0,2,138,38,64,65,97,0,2,40,875
1225 DATA 32,87,97,0,1,240,67,250,2,226,52,120,0,208,78,146
1606
1226 DATA 34,57,0,2,188,28,146,185,0,2,188,28,221,195,97,0
1241
1227 DATA 1,242,67,0,1,208,67,250,2,222,52,136,0,208,78,146
1694
1228 DATA 34,57,0,2,128,20,146,185,0,2,134,16,221,193,97,0,
1225
```

```
1229 DATA 1 210,97,0,1,176,67,230,2,218,52,120 8,268,78 146
 1228
1230 DATA 34.57.8.2.188,12 144.185,0,2 128,4 67,230 9,148,1
18A
1231 DATA 74,17,103,8,146 198 0 2 32 48,201,193 97 0 1 144
 1288
1232 DATA 97 0,1,139 67 250,2 208.52,188,0,208,78,146,24,57
 1442
1233 DATA 0,2 188,A,146,188,0 2 158,0,201,193,97 0 1 152,12
42
1234 DATA 97 0,1,88,87,250,2,238,52 124,0,208 78,144,34 18,
 1383
1235 DATA 8,128,6 0 128,0,97,0 1,186,97 0 1 72,97 0,734
1236 DATA 1 88,67 250 2,164,52,120,0,208,78,148 34 97,0,2,1
271
1237 DATA 128 18,146 185 8,2 128 12 67,250,3,58,74,17,103 6,
 1175
1238 DATA 210,188 0,0,32,48,97,0 1,58,97,0,1,34 87 250 1873
1239 DATA 2,183,52 128,0,208,78,146 47 0 112 6 78 69,53 95 1
231
1240 DATA 97 0,1,32,97 0 0,204,67,250,2 188 52 120 0,208,13
88
1241 DATA 78,146,47,0 34,80,0,9,88,0,116,239,112,34 78,69,1
008
1242 DATA 74,128,103 58,12,128 0,0,4 0 103 0 4 128,0 0,750
1243 DATA 4,0 84 230 67,238,2,282 74,17 103 0,34,80,0 0,1147
1244 DATA 39,48 38,84 68 120,94,80,67,250 2 182 74 17 185 4
0 1332
1245 DATA 73,238,1,118,42 84 218,202,0,0,39,84,177,209,182,
0,1228
1246 DATA 4,128,0 0,35,44,98,36,12,128 0 0 39 48 88,12,208
1247 DATA 112 25,78 65 34 88 0,0 39,48,96 0,47,1,112 25 746
1248 DATA 78,65,34 31 25 95,97,0,0,154 97,0,0 188,97 0 980
1249 DATA 0 156 87,250,2 83 52,128 0 208 78 144,114 233,116
,1,1627
1250 DATA 118,11 78,65 71,280,2,144,38,188,9,1,0,0,18,60 10
47
1251 DATA 0,8 66,107,0 4,20,65,0,0,25,124,0,2 0,7,487
1252 DATA 118,17 78,65 12,1 0,32,102 218,67,230,2 58,74,17,
 1099
1253 DATA 103,0,253,138,75,250,0,242,33,84 36,124,6 3,0,0 1
327
1254 DATA 52,20,0,139,84 20,0 19,38,152,80 138,61,205,239 3
58 1288
1255 DATA 213,252 0 0,0,84,82 208 235,236,33 84 112,25 78 6
5,1629
1256 DATA 96,0 233,80,67 230,2,20,52,120,0,208,78,146,52,12
0,1970
1257 DATA 0 208,47,250,1,238,78 116 114,16 168,255,112,5 78
 67,1737
1258 DATA 78,117,66,132,58,120,86,131,67,250,1 216,211,252
0,0,1774
1259 DATA 6,38,82 250,1,246,78 250 1 242,71,128 102,10 58,1
98 1732
1260 DATA 6,1,28,168,0,48 78 117,68,132 146,145,101 4,88 4,
 1152
1261 DATA 58 240 210 145,147 202 0,0,0,0 83 0 74 4,183,10,1
971
1262 DATA 74 2 182,0 12 0,0,10,102,16 6 4 0,46,88,44,283
1263 DATA 118,1,30,146,12,0,0,10 102 204 58 130 78,117 7,1,
 1288
1264 DATA 16,7 0 185 0,35 0 0,0,0,0,48,127 32,74,32 476
1265 DATA 76,85 87,76 79 83 32,32,69,97 56,92 32,32 83 88 9
79
1266 DATA 83,84,83 84 32,76,79,65,88,89 88 32,32,78,89 32 9
88
1267 DATA 84 79,32 65 67 84 73,84 65,84 65 32,7 1,18,7,238
1268 DATA 1,0,0 140,0 0 0 9,0,0 0,0
1269 DATA 10 "Screen not saved"
1270 DATA 28,"Resident Procedure Area - "
1271 DATA 26,"Transient Program Area  - "
1272 DATA 26,"Allocated Basic Area    - "
1273 DATA 28,"Channels / Heaps        - "
1274 DATA 26,"Sys_Man / Sys_Var Area  - "
1275 DATA 30 "Immediate Free Space         - "
1276 DATA 26,"Total Memory Used       - "
1277 DATA 30,"Largest Free TRNS PRM ecnd  - "
1278 DATA 32,"Largest Available BASP Area - "
1279 DATA 16 "F5 to Deactivate"
1280 DATA 6 " Bytes"
1281 DATA 0 0,0,0,0,1,0,0,0 10,0,0 0,180,0 0
1282 DATA 5 232 0 0 39,14,0,1,154,180 0,15 88,41 0,152
1283 DATA 150,124,5 245,208,0,99,124 208,0,0,0 0,0,0,0
1284 DATA 0,0,0,0,0 0 0,0 0,0,0,0,0,0,0,0 216)
1300 DEFine PROCedure patch
1310   INPUT#0,"Do you wish to alter screen x-origin from 0
 ? " ans$
1320   IF ans$<>"y" AND ans$<>"Y" THEN RETurn
1330   REPeat loop
1340     INPUT "Enter a coordinate (a multiple of 16) e g
16 32,48 max 254 - " x_coord
1350     IF NOT x_coord MOD 16 AND x_coord<257
1360       EXIT loop
1370      ELSE
1380       PRINT "WRONG !!! Try again"
1390     END IF
1400   END REPeat loop
1410   POKE_W (a-85a) x_coord:POKE_W (a-916),x_coord
1420   POKE_L (a-17A),(131072-(x_coord/4))
1430   POKE_L (a-284),(131072-(x_coord/4))
1440 END DEFine
```

Graphic notes

Experiment with sound for your games using this utility by ***Andrew Esmond***

The Commodore 64 has, in its SID chip, one of the best sound chips available on a home computer. However, due to the wisdom of Commodore, the SID can only be accessed by the *Poke* command, needing at least six commands to bleep, let alone perform some of its more complicated functions. Using these *Pokes* once an effect has been worked out is tolerable; however, for experimenting, this system is almost impossible.

The program listed here takes some of the effort out of experimenting by allowing the various envelope values to be graphically displayed and altered using a couple of keystrokes.

When the program is initially *Run*, a bar chart is displayed which illustrates the attack, decay, sustain and release values for all three voices, attack in green, decay in red, sustain in yellow and release in blue. Below this the type of waveform, note frequency and pulse frequency (for the pulse waveform) are displayed. The volume is shown at the top of the screen below the status line which shows which voice is being played or used.

The *Play* section is very simple. On pressing *P* for play, you are asked which voice you wish to play, press 1,2,3 or A (all). The voice is then played. The *Alter* section is slightly more complicated. The initials presented stand for: A-attack, D-decay; S-sustain, R-release, F-frequency, P-pulse frequency, W-waveform, V-volume, X-exit to main program. The A,D,S and R alterations are carried out by pressing + or − to increment or decrement the respective value(s). *X* exits to the alteration choice menu.

The frequency and pulse frequencies are input using the Basic input statement. Take care not to hit *Return* without entering a number as this will upset the display. The range of values for frequency are 0-65535 and 0-4095 for pulse frequency (Hz). The volume is altered in the same way, values for 0-15 are allowed. The wave form is altered by pressing the initial letter of the waveform you want, the abbreviations are *Trian*-triangular waveform, *Swath*-sawtooth waveform, *Pulse*-pulse waveform. The frequency for the pulses can be altered to any value between 0-4095. *Noise* is the white noise waveform.

Program Notes

100-230	Initialises the main variables and sets the screen colours.
900-960	Sets up a trial set of values to test the display routine, delete this when you are sure it is working.
1000-1190	Displays the values and draw the graph.
1200-1310	Choice selection and execution.
2000-2280	This is the routine to play an effect.
3000-3190	The various alteration routines are called from here.
3200-3350	This is the routine to alter the attack. Part of this routine (3280-3290) is used to alter the on-screen graph and is called by the other routines.
3400-3530	This alters the decay.
3600-3740	This alters the sustain.
3800-3940	This alters the release.
4000-4090	This section inputs and checks a new value for the frequency.
4100-4190	This section inputs and checks a new value for the pulse frequency.
4200-4330	This routine is used for changing the waveform.
4400-4430	inputs and checks the new volume level.
5000	A message used for the adsr alter routine.
6000-6020	This just clears the bottom two screen lines.
10000-10010	This clears the sound registers.

```
100 REM*** C64 SOUND EFFECT PROGRAM***
110 REM****BY ANDREW ESMOND*****
120 POKE53280,6:POKE53281,0:PRINT"[CLR]"
130 PV=1:PF=0:FORF=0TO23:POKE54272+F,0:NEXT
140 DIMA(3),D(3),S(3),R(3),F(3),W(3),P(3),VT$(4),WA$(4),WV(4)
150 VT$(1)=" [RVS]VOICE 1[OFF]  VOICE 2  VOICE 3  ALL VOICES"
160 VT$(2)=" VOICE 1  [RVS]VOICE 2[OFF]  VOICE 3  ALL VOICES"
170 VT$(3)=" VOICE 1  VOICE 2  [RVS]VOICE 3[OFF]  ALL VOICES"
180 VT$(4)=" VOICE 1  VOICE 2  VOICE 3  [RVS]ALL VOICES"
190 WA$(1)="TRIAN":WA$(2)="SAWTH":WA$(3)="PULSE":WA$(4)="NOISE":VL=15
200 CD$="[HOME][DOWN x22]"
210 FORF=1TO3:W(F)=4:NEXT
220 GOSUB10000
230 WV(1)=17:WV(2)=33:WV(3)=65:WV(4)=129
900 FORF=1TO3
910 A(F)=INT(RND(1)*16)
920 D(F)=INT(RND(1)*16)
930 S(F)=INT(RND(1)*16)
940 R(F)=INT(RND(1)*16)
950 W(F)=F:F(F)=INT(RND(1)*65000):P(F)=INT(RND(1)*1700)
960 NEXT
1000 REM*** DRAW MAIN DISPLAY ***
1010 PRINT"[CLR]"VT$(PV):PRINT"  VOLUME:"VL
1020 PRINT"  15 "T":PRINT"      "T":PRINT"      "T":PRINT"      "T":PRINT"      "T"
1030 PRINT"V 10 "T":PRINT"A     "T":PRINT"L     "T":PRINT"U     "T":PRINT"E     "T"
1040 PRINT"  00 "T":PRINT"      "T":PRINT"      "T":PRINT"      "T":PRINT"      "T"
1060 PRINT"  40 ______________________________"
1070 PRINT"      A D S R   A D S R   A D S R"
1071 PRINT"      VOICE 1   VOICE 2   VOICE 3"
1073 PRINT"WAVE":PRINT"FREQ":PRINT"PULSE[UP x7]",
1080 SB=1670
1090 FORC=1TO3
1100 V=A(C):CL=5:GOSUB1120:V=D(C):CL=2:GOSUB1120:V=S(C):CL=7:GOSUB1120
1110 V=R(C):CL=6:GOSUB1120:SB=SB+2:NEXT:GOTO1160
1120 IFV=0THENSB=SB+2:RETURN
1130 FORF=0TOV-1
1140 POKESB-F*40,160:POKESB+1-F*40,160:POKESB-F*40+54272,CL
1150 POKESB-F*40+54273,CL:NEXT:SB=SB+2:RETURN
1160 PRINT" ",
1170 FORF=1TO3:PRINTWA$(W(F));"     ";:NEXT:PRINT
1180 PRINTTAB(5):F(1):TAB(15):F(2):TAB(25):F(3)
1190 PRINTTAB(5):P(1):TAB(15):P(2):TAB(25):P(3)
1200 PRINT"[HOME]SELECT -  [RVS]P[OFF]LAY,  [RVS]A[OFF]LTER,  [RVS]E[OFF]XIT";
1210 POKE198,0
1220 GETA$:IFA$<>"P"ANDA$<>"A"ANDA$<>"E"THEN1220
1230 IFA$="P"THENGOSUB2000:GOTO1310
1240 IFA$="A"THENGOSUB3000:GOTO1310
1250 PRINTCD$,"        ARE YOU SURE (Y/N)?"
1260 POKE198,0
1270 GETA$:IFA$<>"Y"ANDA$<>"N"THEN1270
1280 IFA$="N"THEN1000
1290 PRINT"[CLR]  SOUND EFFECT EDITOR, .A.ESMOND 1985  "
1300 END
1310 GOSUB6000:PRINTLEFT$(CD$,24);:GOTO1000
2000 REM PLAY SOUND EFFECT
2010 PRINTLEFT$(CD$,24),"PLAY SOUND EFFECT "
2020 PRINT"SELECT - VOICE [RVS]1[OFF] . [RVS]2[OFF] . [RVS]3[OFF] . [RVS]A[OFF]LL"
2030 POKE198,0
2040 GETA$:IFA$<>"1"ANDA$<>"2"ANDA$<>"3"ANDA$<>"A"THEN2040
2050 IFA$="A"THENPV=4:PRINT"[HOME]"VT$(PV):GOTO2200
2060 PV=VAL(A$):SE=0
2070 PRINT"[HOME]"VT$(PV)
2080 GOSUB10000
2090 BA=54272+(PV-1)*7
2100 POKE54296,VL
2110 POKEBA,F(PV)-256*INT(F(PV)/256):POKEBA+1,INT(F(PV)/256)
2120 POKEBA+2,P(PV)-256*INT(P(PV)/256):POKEBA+3,INT(P(PV)/256)
2130 POKEBA+5,A(PV)*16+D(PV):POKEBA+6,S(PV)*16+R(PV)
2140 POKE54296,VL
2150 IFSE=1THENRETURN
2160 POKEBA+4,WV(W(PV))
2170 GOTO2220
2200 REM PLAY ALL VOICES
2210 SE=1:FORPV=1TO3:GOSUB2080:NEXT:PV=4
2215 FORF=1TO3:POKE54276+F*7,WV(W(F)):NEXT
2220 PRINTCD$"SELECT - [RVS]A[OFF]GAIN OR [RVS]M[OFF]ENU.
2230 POKE198,0
2240 GETA$:IFA$<>"A"ANDA$<>"M"THEN2240
2250 IFA$="A"THENGOSUB10000:GOTO2000
2260 GOSUB10000:RETURN
3000 REM***ALTER SOUND EFFECT***
3010 PRINTLEFT$(CD$,24),"ALTER SOUND EFFECT"
3020 PRINTCD$"SELECT - [RVS]A[OFF]  [RVS]D[OFF]  [RVS]S[OFF]  [RVS]R[OFF]  [RVS]F[OFF]  [RVS]P[OFF]  [RVS]W[OFF]  [RVS]V[OFF]  [RVS]X[OFF] ",
3030 POKE198,0
3040 GETB$:IFB$=""THEN3040
3041 IFB$="V"THEN4400
3042 IFB$="X"THENRETURN
3043 IFB$="A"ORB$="D"ORB$="S"ORB$="R"ORB$="F"ORB$="P"ORB$="W"THEN3050
3044 GOTO3040
3050 REM***PLEASE REFER TO TEXT FOR MEANING OF ABOVE ABBREVIATIONS
3060 POKE198,0
3070 PRINTCD$"SELECT - VOICE [RVS]1[OFF] . [RVS]2[OFF] . [RVS]3[OFF] . [RVS]A[OFF]LL        ",
3080 GETA$:IFA$<>"1"ANDA$<>"2"ANDA$<>"3"ANDA$<>"A"THEN3080
3090 IFA$="A"THENPV=4:GOTO3110
3100 PV=VAL(A$)
3110 PRINT"[HOME]"VT$(PV)
3120 IFB$="A"THEN3200:REM ATTACK
3130 IFB$="D"THEN3400:REM DECAY
3140 IFB$="S"THEN3600:REM SUSTAIN
3150 IFB$="R"THEN3800:REM RELEASE
3160 IFB$="F"THEN4000:REM FREQUENCY
3170 IFB$="P"THEN4100:REM PULSE FREQ
3180 IFB$="W"THEN4200:REM WAVE
3200 REM***ALTER ATTACK***
3210 GOSUB3000:POKE198,0:AE=1710
3220 GETA$:IFA$<>"+"ANDA$<>"-"ANDA$<>"X"THEN3220
```

```
3230 IFA$<>"+"THEN3310
3240 CC=160 CR=5 IFPV=4THEN3260
3250 RE=0 IFA(PV)<15THENA(PV)=A(PV)+1 A=A(PV):GOTO3280
3255 GOTO3230
3260 FORF=1TO3 IFA(F)<15THENA(F)=A(F)+1
3270 NEXT FORPV=1TO3 RE=1 A=A(PV):GOSUB3280 NEXT PV=4 GOTO3230
3280 BA=A+(10*(PV-1))-AA40:POKEBA,CC POKEBA+1 CC:POKEBA+54272,CR
3290 POKEBA+54273,CR IFRE=1THENRETURN
3300 GOTO3020
3310 IFA$="X"THEN3000
3320 RE=1 CC=32 IFPV=4THEN3340
3330 IFA(PV)>0THENA=A(PV) GOSUB3280 A(PV)=A(PV)-1:GOTO3210
3340 GOTO3210
3350 FORPV=1TO3 IFA(PV)>0THENA=A(PV) GOSUB3280 A(PV)=A(PV)-1
3360 NEXT PV=4 GOTO3220
3400 REM**ALTER DECAY**
3410 GOSUB5000 POKE198,0 AA=1712
3420 GETA$ IFA$<>"+"ANDA$<>"-"ANDA$<>"X"THEN3420
3430 IFA$<>"+"THEN3490
3440 RE=1 CC=160 CR=2 IFPV=4THEN3470
3450 IFD(PV)<15THEND(PV)=D(PV)+1 A=D(PV) GOSUB3280
3460 GOTO3420
3470 FORF=1TO3 IFD(F)<15THEND(F)=D(F)+1
3480 NEXT FORPV=1TO3 A=D(PV) GOSUB3280 NEXT PV=4 GOTO3420
3490 IFA$="X"THEN3000
3500 CC=32 CR=2 IFPV=4THEN3520
3510 IFD(PV)>0THENA=D(PV) GOSUB3280 D(PV)=D(PV)-1 GOTO3420
3515 GOTO3420
3520 FORPV=1TO3 IFD(PV)>0THENA=D(PV):GOSUB3280 D(PV)=D(PV)-1
3530 NEXT GOTO3420
3600 REM**ALTER SUSTAIN**
3610 GOSUB5000 POKE198,0 AA=1714
3620 GETA$ IFA$<>"+"ANDA$<>"-"ANDA$<>"X"THEN3620
3630 IFA$<>"+"THEN3690
3640 RE=1:CC=160 CR=7 IFPV=4THEN3670
3650 IFS(PV)<15THENS(PV)=S(PV)+1 A=S(PV) GOSUB3280
3660 GOTO3620
3670 FORF=1TO3 IFS(F)<15THENS(F)=S(F)+1
3680 NEXT FORPV=1TO3 A=S(PV) GOSUB3280 NEXT PV=4 GOTO3620
3690 IFA$="X"THEN3000
3700 CC=32 CR=7 IFPV=4THEN3720
3710 IFS(PV)>0THENA=S(PV) GOSUB3280 S(PV)=S(PV)-1 GOTO3620
3720 GOTO3610
3730 FORPV=1TO3 IFS(PV)>0THENA=S(PV):GOSUB3280 S(PV)=S(PV)-1
3740 NEXT GOTO3620
3800 REM**ALTER RELEASE**
3810 GOSUB5000 POKE198,0 AA=1716
3820 GETA$ IFA$<>"+"ANDA$<>"-"ANDA$<>"X"THEN3820
3830 IFA$<>"+"THEN3890
3840 RE=1 CC=160 CR=6 IFPV=4THEN3870
3850 IFR(PV)<15THENR(PV)=R(PV)+1 A=R(PV) GOSUB3280
3860 GOTO3820
3870 FORF=1TO3 IFR(F)<15THENR(F)=R(F)+1
3880 NEXT FORPV=1TO3 A=R(PV) GOSUB3280 NEXT PV=4 GOTO3820
3890 IFA$="X"THEN3000
3900 CC=32 CR=6 IFPV=4THEN3930
3910 IFR(PV)>0THENA=R(PV) GOSUB3280 R(PV)=R(PV)-1 GOTO3820
3920 GOTO3810
3930 FORPV=1TO3 IFR(PV)>0THENA=R(PV) GOSUB3280 R(PV)=R(PV)-1
3940 NEXT GOTO3820
4000 REM**ALTER FREQUENCY**
4010 GOSUB5000 PRINTLEFT$(CD$,24);"                    ";LEFT$(CD$,24);
4020 INPUT"NEW FREQ";NF
4030 IFNF<0 OR NF>65535THEN4010
4040 IFPV=4THEN4060
4050 F(PV)=NF GOTO4070
4060 FORF=1TO3 F(F)=NF NEXT
4070 PRINTLEFT$(CD$,22);"FREQ";TAB(5)F(1)"   "TAB(15)F(2)"   ";TAB(25);
4080 PRINTF(3)"   "
4090 GOTO3000
4100 REM**ALTER PULSE FREQUENCY**
4110 GOSUB5000 PRINTLEFT$(CD$,24);"                    ";LEFT$(CD$,24);
4120 INPUT"NEW PULSE <4096";NP
4130 IFNP<0 OR NP>4095THEN4110
4140 IFPV=4THEN4160
4150 P(PV)=NP GOTO4170
4160 FORF=1TO3 P(F)=NP:NEXT
4170 PRINTLEFT$(CD$,22);"PULSE";TAB(5)P(1)"   "TAB(15)P(2)"   ";TAB(25);
4180 PRINTP(3)"   "
4190 GOTO3000
4200 REM**ALTER WAVEFORM**
4210 PRINTLEFT$(CD$,24);"ALTER WAVEFORM"
4220 PRINT"SELECT -TRIAN  SAWTH  PULSE  NOISE";
4230 POKE198,0
4240 GETA$ IFA$<>"T"ANDA$<>"S"ANDA$<>"P"ANDA$<>"N"THEN4240
4250 IFA$="T"THENNW=1
4260 IFA$="S"THENNW=2
4270 IFA$="P"THENNW=3
4280 IFA$="N"THENNW=4
4290 IFPV=4THEN4310
4300 W(PV)=NW GOTO4320
4310 FORF=1TO3 W(F)=NW NEXT
4320 PRINTLEFT$(CD$,21);"WAVE   ";:FORF=1TO3 PRINTWA$(W(F))"     "; NEXT
4330 GOTO3000
4400 REM **ALTER VOLUME**
4410 GOSUB5000 PRINTLEFT$(CD$,24) INPUT"NEW VOLUME";NV
4420 IFNV<0ORNV>15THEN4410
4430 PRINT"  VOLUME ";NV"  " VL=NV GOTO3000
[illegible] PRINTCR$;" "+" TO INC "-" TO DEC;"X" TO EXIT"; RETURN
5000 REM**CLEAR BOTTOM LINE**
5010 PRINTLEFT$(CD$,24);"                    "
5020 PRINT"                    "; RETURN
5030 GOTO3020
10000 REM CLEAR SOUND REGISTERS
10010 FORF=0TO23 POKE54272+F,0 NEXT RETURN
```

Private function

*Program your own function keys on the Amstrad with this routine from **John Hurst***

One of the many clever features of the Amstrad is its ability to support Function Keys. The keys in question are those on the numeric pad, to the right of the main keyboard. By using the "*Key Def*" command (as described in Chapter 8, p23 of the Manual), one can re-assign these keys, so as to make them carry out quite complicated manoeuvres. This can be particularly useful when writing a Basic program. there are a lot of commands, which get used over and over again, and it is a tremendous convenience to be able to carry them out with a single key-stroke, rather than to type them in individually in full.

Of course, everyone has his, or her own list of pet functions, but the list given here is the result of some considerable time spent programming on the 464. I keep the program which Loads them on a cassette of its own, and Load this before every session, so that the key pad is always primed with the special functions.

The list of functions is given in Fig 1, which shows their distribution on the key-pad. Fig 2 is the Basic program listing to implement them. Here's a breakdown of what they are each designed to do.

"ENTER" is left alone and not re-programmed. It does "ENTER" when used normally and a "LOAD & RUN", when used with CTRL.

" " give *Cls List*. You are always needing to *List* a program under construction, when it has been changed, or had a line added. This particular setting does not allow a line to be specified, as the "*Chr$(13)*" in the function ensures that the new function executes itself.

"0" gives *Run*. Another obvious must. These last two commands, I find, are the most commonly used, which is why they are assigned to the two keys next to *enter*.

"7" gives *Chr$(* – but obviously doesn't execute. The idea is to use it in combination with *Key 8* (giving ")"), so that one can insert *Chr$(xx)*, with the minimum fuss.

"9" gives *,&*. This is used when compiling *Data* lists – if, like me, you tend to use Hex notation when preparing User Defined characters, with the help of *Symbol* (Ch 8 p48 of the Manual). This key setting makes it very easy to write *&00,&FF,&F0,&0F* etc, etc.

"4" gives ",". Also used for *Data* lists, this time for strings – as in, "*Peter*","*Ann*","*David*". The Function has to be written using Chr$(34), as the double quote otherwise gets the Basic in a muddle.

"5" gives –, and for the reason fo the paragraph above this is chosen to give a printed double quote.

"1" gives *Auto*. It is not allowed to execute, as you usually want to specify the line number – almost invariably the next line number of the program. Somewhere in the Basic must be hidden the value of the existing last line of the program, so that one ought to be able to get the Function to discover its own "next Line" number.

"2" gives *Edit*. Again, this is an obvious function to have on the pad, when writing a program. Like *Auto*, the function incorporates a space at the end, so that it is possible to type in directly the line number you want to edit.

Two further lines are added to the *Key Def* program. At Line 100 *Width 32* which is only useful if you have a printer, as it sets the line length used. I have a roll of 3½ inch cash register paper permanently fed into my Brother M-1009 for scratch print-outs, and this setting just fits the roll. The paper is held in an adapted toilet roll holder, but this is not meant to be a reflection on the value of the software.

Finally, the last line of the program is *New*. This effectively clears the decks for another Basic program, but leaves all the newly defined Functions in place. Obviously, the selection given here doesn't end the possibilities for the Function keys. Two keys have not yet been assigned, you may want to add some more commands, or change the ones I have suggested. But having your own cassette for Loading before you do any programming, is a very worthwhile investment.

7 CHR$(	8)	9 ,&
4 ","	5 "	6
1 AUTO	2 EDIT	3
0 RUN	LIST	ENTER

Fig. 1

```
"KEY DEF" LISTING

10 KEY 128,"run"+CHR$(13)
20 KEY 129,"auto "
30 KEY 130,"edit "
40 KEY 132,CHR$(34)+CHR$(44)+CHR$(34)
50 KEY 133,CHR$(34)+";chr$(34);"+CHR$(34)
60 KEY 135,"chr$("
70 KEY 136,")"
80 KEY 137,",&"
90 KEY 138,"cls:list"+CHR$(13)
100 WIDTH 32
110 NEW
```

Fig. 2

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Faithful following

Arrow of Death from Adventure International seems to have had a very faithful following over the last few months and I'm not surprised, as it has quite a lot of atmosphere, despite the usual syntax problems that Brian Howarth programs display – the players spends much of the time searching for the right combination of words, and to me that's dull. The *Daily Telegraph* or *Times* both have better crosswords if that's what you're after!

However, *Arrow* as I've said, does keep the interest alive, and most of the problems holding people up are to do with getting into the Giant's Building, without being killed (well you didn't think that this was going to be easy, did you?) Of course, before going into the Castle, wouldn't it be best to nobble the Giants? To do this, take the Toadstools from the Clearing and add them to the Broth in the Cookhouse Cauldron – just type *'Poison (or Drug) Broth'*' This will put the Giants to sleep and allow you to proceed unhindered. The problem of the Guardians by the Sacred Willow is solved by throwing the Medallion – you should then cut the branch

In pursuit of Trivia No 1 Go West is, as you'll know, a phrase which adventurers will have used many times – it's also, of course, now better known to the world at large as the name of one of the latest successful groups. One of the two guys who make up the band, Richard Cox and Peter Drummue (I'm not sure which), is a keen Beeb user and adventurer – when a name for the group had to be found, what else could it be? Go West, young man!

Now back to the most enduring adventure of them all, *Colossal Adventure* to give it just one of the names by which it is known. It is, whatever the name the original and classic game as implemented on the huge mainframes of several years ago. It is classic, not only because it was the first and probably best known, but also because the problems contained therein display a neat simplicity that has remained unsurpassed

There are several versions for home micros, probably the best, for us British adventurers, that from Level 9 boasting as it does a lengthy end-game not featured in the original. The problems in the first part are, in most respects, the same as the original, and most of the versions available are much the same as each other, differing only in the wording needed to solve the problems. A major difference, however, is found in the Abersoft version, now marketed by Melbourne House as *Classic Adventure*. The first problem in the adventure is how to get past the snake – the solution has been revealed about 54 times in various places, so I will not be giving anything away by saying that you must first get the Bird (how? Well, that is another sticky problem. but let's say that birds in this cave system are rather tame except when they see Black Rods!), and then release it in the presence of the old snake, which takes fright and slithers off. Abersoft, rather humourlessly, think that the snake will eat the bird

As evidence that the problems are as tough as ever, I still get many letters regarding *Classic Adventure*, whatever the version is called. "I can get across the fissure, but the only place I can get to from there is where Batteries are for sale. Please help!" So says G S Kewin of The Isle of Man. The vending machine is in the Different Maze, and, as you have found, contains batteries for your lamp, and you'll need a coin to feed into the machine. To get out of the Maze from the Vending machine, go North and Up. You should be back in the West end of the Long Passage. Now go East, then North, North and Up – this will bring you to the Slab Room and from there quite a few locations will become open to you. Of course, you can go to other places from the Maze – nearby is another Maze this one being of rooms all the same which contains the Pirate's Chest. Bill from Knottingley was encouraged to try *Colossal Adventure* and has done quite well – up to a point. "What do I do with the Gazette where is the Pirate's Maze, how do I get my treasure back when he pinches it?" You should know the answer to most of your questions now, Bill – the Gazette, which is found not far from the Slab Room mentioned before, can of course be read, but can also be left at the next location (Witt's End) for extra points. But beware it's not easy to leave once in there, though repeatedly typing South should do the trick

In his recent letter, Dave Chapman of Timperley also mentions *Colossal Adventure*. "On writing to Level 9 for a free clue, which together with help from The Corner enabled me to complete the game, I commented that I thought having four mazes in one game was a bit much, and also wondered why one should have to go back to the start of the first part when failing the second – Level 9 wrote back to say 'are you playing *Colossal*?' Overall, though, I thought that *Colossal* was good and I look forward to trying Level 9's next tape."

I agree that four mazes is pouring on the agony a little, and I'm not a fan of mazes anyway – but there are many adventurers who revel in the challenge. As for going back to the very start – well it shows you the importance of saving your position before any drastic decision. Dave goes on to say "I must mention *Knight's Quest*, one of your favourites. I have arrived at the point where the Eagle attacks you after rescuing the Princess but have been unable to get any further – the game now gathers dust, but I would still rate this as one of the best adventures for the Spectrum. Can you help me with CCS's *The Prince*? The game loads properly but the problem is that only Ferrordo of the main characters will carry out his specific duties."

I have never had the pleasure of seeing this game, though it appeared as a listing in an issue of *Sinclair User* some months ago. Try writing to them for a back issue and you might then be able to alter the code. But of course, you should not be expected to do CCS's work for them. Dave also says that he has completed *Planet of Death* and *Urban Upstart* both of which he liked. The eagle problem in *Knight's Quest* is rather complex – but the outcome of the attack depends on which weapon you use to defend yourself. If you use the Sword, you will be taken to the eagle's eyrie, which is actually no bad thing. If you have found the Diamond spear in the Castle of Clouds, then you have a dead eagle

In pursuit of Trivia, No 2: passing an off licence the other day (a momentous event in itself), the Grand Elf was amazed to see a bottle of wine displayed, with the label bearing the proud legend "Thorin"! For a mere £2 50 or so, that's good value for a wine that will sing to you about Gold.

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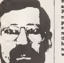
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Peek & Poke



On the market

David Fox of Sheffield, writes.

Q **How do I go about selling my own programs? I have a computer and I have made some of my own games which I feel wouldn't do too bad if marketed under my name. What do I do?**

A Firstly, you will have to sell by mail order. You are unlikely to attract any of the large retailers, at least until you have established some sort of reputation. Secondly, you will have to obtain some means of duplicating your software (some form of tape copier would be best). It is probably not worth your while getting tape insets or labels produced, owing to the small quantities that you are likely to need (at least initially).

Lastly, you will need to advertise in magazines, so that the world can be told of your products. Your prices should be realistic . . . don't price your games as high as the retailed products – people won't buy.

Freezed computer

Angus Ross, of Norwich, writes

Q **One of the more irritating habits of my QL, which I use principally for word processing with *Quill*, is its habit of freezing occasionally for no apparent reason. One of the sources of unreliability with *Quill* is certainly the microdrive, but they do not seem to be the culprit here. Could the problem be spikes in the mains supply? *QL User* magazine recently carried a story about a device from Power International that claimed to eliminate the problem. Is there any reason to believe the QL to be more sensitive to spikes in the mains than any other home computers? I have never had this problem with my Vic 20.**

A A 'freezing' computer — this symptom is usually caused by one of three things: (a) a bug in the software, (b) a faulty machine, (c) a sudden peak or low in the power supply.

I find the last one harder to believe in your case than the first two.

As you say you always use *Quill*, do you never have this problem when using other software on the QL? The power supply would seem to be OK, because, as you say, you have never experienced problems with your other computer.

One thing you do not mention is how long after switching on it is before you get your problem. A common problem with home computers is their uncanny knack of suddenly going 'dead' after about an hour of trouble free use.

My advice would be to try other software on the QL and see if the problem still occurs. If it does not then I suggest that you contact the shop/dealer who sold you the machine and arrange for it to be repaired.

Spectrum recorder

J Maffey of Kings Lynn, writes

Q **I am going to buy a Spectrum + and want to know if there is any cassette recorder recommended to be used with it. If so are there any special leads required?**

A Any cassette recorder with 2.5mm earphone and microphone sockets should work with the Spectrum +. Ordinary mono recorders tend to give better results than stereo ones. A tape counter is an extremely useful feature to have, so that you can locate programs on a long tape.

There are a number of so called 'computer compatible' recorders on the market which do indeed give good results. The best advice is to shop around and get the best deal you can.

You will not need to get any special leads as the Spectrum comes complete with the necessary connections, etc.

Slow disc drive

K Ebberley of Manchester, writes

Q **I have a Commodore 64 and am extremely happy with it except for one thing, the disc drive is extremely slow. Is there no way of speeding the thing up?**

A Ah . . . you've noticed then that the manufacturer who brought you the elephant that never forgets, also brought you the disc drive that reads just about as fast as one!

In defence of Commodore, however, it is fair to say that their disc drives are comparatively cheap, and as is always the case, you pays your money and you takes your choice.

There is unfortunately nothing that can really be done to speed them up, they are just built that way.

Forth alternative?

D Rise of Bournemouth, writes

Q **I have a Sinclair Spectrum, and am very interested in programming. I have learned and mastered Basic, and want to move on to something more demanding. A friend suggested Forth as an alternative to machine code. Do you think that this is a good idea and can you recommend a good package?**

A As far as recommending a good package is concerned, I need go no further than Abersoft Forth, which is widely accepted as about the best, cheap (£15.00) version available. As to whether I think that using Forth is a good idea, it depends.

If your purpose is to experiment with programming techniques, and to build up your own programs for purely personal use, then Forth is a good idea. If however you want to write programs for sale, then I would suggest machine code. I say that not because Forth is an inferior language, but because it usually requires the interpreter software to be in memory when it loads. This would, of course, bring copyright problems.

Unlimited lives

Nicola Laurenson of Newton-le-Willows, Merseyside, writes

Q **For Christmas I received a C16M 64, I also received a tape called *Manic Miner*. So far I haven't got farther than Room 1. While reading a back issue of *Popular*, I saw a set of *Pokes* compatible with the Spectrum version. Is there a set of codes on the C16M that will enable me to get into any room I like? I'm desperate!**

A In Vol 4 No 1 Tony Kendle (Arcade Avenue) printed just the things you need to know. As I know the feeling well of trying to get past that stupid creature and those silly flowers . . . here are the *Pokes*! Type, *Verify* (return), *Load* "",1,1 (return and play), *Poke 16573,234* (return), *Poke 16572,234* (return), *Poke 16571,234* (return), *Sys 16384* (return).

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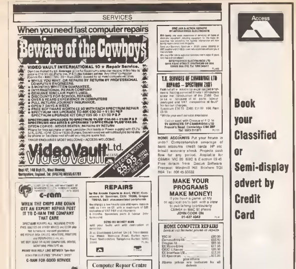
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QL with manuals + leads £200 Contact Dave Brunton 96 Station Road Reddish Stockport Cheshire

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Tandys for Sale

TANDY 100 32K [illegible] S/W [illegible] original price £350 excellent working condition Tel 0632 459431

APPLE 2 compatible 64K 80 colour £280 printer card £140 2 drives £180 £193 Green Monitor 9" £30 Teac Dot matrix printer 180 CPS £220 Andrew Wong Room 5 John Adam Hall 15/23 Emmaleigh Street WC1H

TANDY THERMAL printer model FTP 10 as new cost £80 Unwanted gift including interface cable for TRS-80 computer paper plug etc Still boxed accept first £37 50 and will post Tel 0244 875717

TANDY TRS 80 colour extended 16K joystick manuals game perfect condition £70 Tel Newcastle-upon Tyne 324806 evenings

Wanted

WANTED Spectrum Micro [illegible] (up to £30) Swap Currah Speech (VGC) for Cheetah Sweet Talker (sell £20) Also poly synth (Siel MK900 etc)/casio keyboard wanted (up to £300) Tel Neil 0248 712862

WANTED Sinclair printer for Spectrum must be in v good working order will pay £25 plus some software write to Jeff 28 Harry Price House Hartlebury Road, Oldbury Warley B69 1EQ

WANTED Interface one and microdrive will swap for VFX5000 Modem plus books Tel Andrew on Neath 760 452 or write to 1 Heol-y-graig Crynant Neath SA10 8TF

EXCHANGE Spectrum 16K complete on/off reset switches for Brother EP22 typewriter/printer or sell £55 ono Chris 01 979 5047 (9-5)

MEMOTECH Pascal Rom-chip wanted also Memotech RS232 communications board wanted Telephone David on (0276) 963181 after 5 30

WANTED CBM 64 or BBC will exchange classical guitar A hambra 8C value £250 plus carrying case and foot stool Phone Enlie r 01 363 3383

WANTED Atari 400 48K Ram board Willing to swap 2 to 6 Roms depending on condition (working board or not) or £20 Telephone Steve 061 796 2188 after 7pm

SWAP Prism VTX5000 + software for ZX printer + paper Perfect condition Kevin Ashbridge 29 Queen Crescent, Frizington Cumbria

WANTED Oric 1 keyboard and case Did you keep it when upgrading to Atmos? I will give you £10 for it! Write to Mr Norton 138 Newlands Road Stirchley B ham B30 2RH

WANTED to buy Amstrad hardware & software (local area preferred) Mr Gerry 3 Upper Ham Road Ham Richmond Surrey

WANTED Acorn Sel Vajushi for BBC micro Tel Redhill 2632 Wanted Z40 processor

EXCHANGE Sinclair QL for Apple II plus accessories Write B Jamieson 9 Hartford Crescent Ashington Northumberland NE63 0DD

WANTED cheap printer software utilities etc for Spectrum Also other cheap computer working or not for college studies Write Nigel Richardson Flat 15 22 Thicket Road Sutton Surrey SM1 4PS

SWAP camera equipment for modern computer + printer Olympus OM2N outfit worth £800 Tel 0708 547868 (Essex)

WANTED Atari 800 or 400 48K Tel South Shields 558990

SWAP Currah Microspeech (Spectrum) for working ZX81 or broken Spectrum Please phone (0707) 42095 evenings & weekends

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WILL swap Stonechip programmable joystick interface Quickshot II and Cambridge joystick. All working perfectly for Alphacom 32 printer Phone (0565) 71911 after 5pm Mon-Fri and ask for Stuart.

SWAP my Tokai Strat guitar and Marshall 30W Amp for your 1541 disc drive or £265 of your cash Tel (0245) 670264 after 5pm

SWAP Amstrad CPC 464 with colour monitor joystick cassette for Casio CZ101 or synthesiser Write to D Scott 26 Harden Place Hawick, Scotland

WANTED ZX printer or Alphacom 32 with rolls will pay up to £15 (not inc paper) Write to Brian O Conner 5 Almeida Tce Kilmainham Dublin 8 Also wanted Spectrum s/w

WILL swap Stonechip programmable joystick interface Quickshot II and Cambridge joystick. All in v g c for Alphacom 32 or microdrive + Interface Phone (0565) 71911 after 6 o clock Mon Fri and ask for Stuart.

Now a poor unemployed Spectrum owner requires your unwanted microdrive or wafadrive Must be very very very cheap or even free Phone (0565) 71911 after 5 Mon Fri Ask for Stuart

WANTED 1 Dragon Premier 5¼ Disc User or exchange of hints/tips/disc. Tel Stirnes 58707 after 8pm

WANTED Basic for Sharp MZ80K plus any other software or books including owners handbook Tel Mr Reeves 0923 31287

WANTED Vic 20 16K expansion and Bongo Will buy or swap for 2 cars and Wacky Waiters tape for unexpanded Vic Needed urgently Tel 0926 316 348

ZX PRINTER (working) wanted Up to £30 paid Tel 0642 740 720 after 6pm

EXCHANGE Textile Word Processor & Colossus Chess both on disk for Basic compiler on disk for Commodore 64 or Light pen Tel 01-478 7986 after 6pm

WANTED Atari 810 disc drive Any reasonable offer considered Write G Yandall 1 Eastley Basildon Essex SS16 5TO

SWAP my CBM 16 C2N Intro to Basic £100 games mags and books for your Atari 800 XL with tape unit joystick and games Tel 0703 731472 I also have joystick

WANTED ZX80 computer Must be in good condition with leads manual etc and very cheap! ZX81 Vic 20 Jupiter Ace Aquarius etc also wanted Must be cheap Phone 0763 61392

SWAP Currah Speech for ZX printer or Kempston joystick Tel or write to Chris now 0A8 8279

QL wanted QL monitor Lisp Toolkit Integrated Accounts cash trader for sale QL Pascal Tel 021 742 1966

WANTED Oric and Acorn software Must be originals Also any ZX81 software and Dragon software Cash paid for quality items Tel 0268 512940 (after 7pm)

SWAP Spectrum 48k upgraded to Plus Kempston Triple Joystick interface software and joystick for CBM 64 with C2N cassette deck Eales 33 Lower Ellacombe Church Road Torquay Devon

SWAP Dragon 64 2 joysticks 5 games 3 books and mags for Spectrum Plus or Electron or sell £140 ono Tel Nottingham (0602) 639682

WANTED Dragon 32/64 Edinburgh area Will collect Any peripherals considered Tel 0506 55231

WANTED ZX81 s/w Good price paid for good s/w (originals only) Tel 01 573 7581

SWAP Spectrum Plus, still under guarantee + books + mags + joystick interface + lot of software for CBM 64 + C2N or sell £180 Write Gary Sanger 30 Stat on Aliens's Wickford Essex

COMMODORE 1541 Disc drive plus 8 discs offers or exchange Spectrum 48K plus cash also Compunet Modem and Membership Ask for Tony Tel 0482 838113 (anytime)

WANTED to Buy Interface & disc drive Tel Sunderland 40858 anytime

WANTED Hewlett Packard HP 98 Computer disc drive etc will buy for cash or part exchange for professional camera outfit Mamiya RB67 plus lenses Tel Wolverhampton 751678

BBC-B wanted preferably with disk drive and games willing to pay up to £400 Tel Luton 37968 after 5pm

SHERLOCK on CBM64 General tips wanted Write to Allan Copper 22 The Cressways Old Coulsdon Surrey or phone Downland 58122.

WANTED Dot matrix printer RS232 only or with interface for Spectrum Must be under £100 Also wanted Teletype-style printer (RS232) cheap but working Tel Bookham 56327

WANTED 4040 Commodore dual disk drive Tel 0735 868175

AMSTRAD Penpal wanted Write to Mark Lee 3 Leopardstown Court, Stillorgan Co Dublin Ireland

WANTED Hint sheets for Lords of Time Adventure Quest Dungeon Adventure Tel 0573 770507 Mr Arthur

AMSTRAD colour monitor 2 joysticks several books mags £400 of original s/w Swap for BBC or CBM64 with disc drive Tel (0860) 65614 Kenn (day)

WANTED new Spectrum s/w Very good price No copies. D Snell Tel Redhill 2673

WANTED Jupiter Ace working condition Tel 01-330 3837 evenings

COMMODORE USERS!! I desperately require the following articles Inside CBM Dos from Prentice Hall Anatomy of the 1541 Disk Drive from Adamsoft/First Publishing Phone me now! Mike 0558 822504

ADVENTURE HELPLINE

Colditz on Spectrum. How do you stop the floor boards from creaking when getting the wire cutters? How do you get off the window ledge? Mark Howlett 88 Byngham's Harlow Essex.

Denis Through the Drinking Glass on Spectrum How do you get a drink and get out of number 10? R Wilson, 8 Westfield Terrace Loftus Saltburn, Cleveland

Claymore Castle on Commodore 64. How do I climb the fountain without dying? How do I open the stone door? How do I get the gun? Steve Huckvale 47 Finham Green Road, Finham Coventry (0203 418808)

Tomb of Kelops on Commodore 64. I cannot get the majestic painting miniature pyramid or 100 grinning skulls What use is the fruit cake? Leslie Austin 28 Royal Avenue West Onchan Isle of Man.

Fantasia Diamond on Amstrad. I can't open the trapdoor or musical door because the conductor stays there. Is there something missing? Mohamed Lakhi 58 Cardinals Way London N19

The Tracer Sanction on Commodore 64. Where do I find Sele on Darren to reach Valkyron? Marco van Slagaren Langewater 388 1069 EC Amsterdam holland.

Spiderman on Commodore 64. How do I reach the mysterious cloud? How do I start the presses? J H Dyson Bryn Tirion Vaynol Park Bangor Gwynedd.

Sherlock on Spectrum. How do you get into Basil Phipps and Tricia Fand er s London homes. Sarah Young 40a Carnarvon Road, South Woodford London E18

Tower of Despair on Spectrum. How do I get past the Demonlord? Roel Castelein Ullenshofstraat 13 2080 Merksem Belgium.

Return to Eden on Spectrum How do I start? I keep getting zapped! Dave Edwards, 45 Riverdale Court, Higher Blackley Manchester

Mission 1 Project Volcano on Amstrad Please send out a plea of help. I have got past the lift droid and up to the second level but I can't get any further without being gassed. Tony Goodman, 87 Crescent Road Ramsgate Kent (0843 596304)

Empire of Karn on Commodore 64. How do you kill the snake and how do you get the key from the widow Nasil? Gillian Dodson, 13 Amethyst Road, Christchurch Dorset

Jewels of Babylon on Amstrad. Where is the key for the door and how does the stab move? Mr B F Fox 364 West Road Oldbury

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP or telephone 01 437 4343

All software offered through computer swap must be in original condition and for private sale only

It cannot be swapped

Warning It is illegal to advertise pirated software

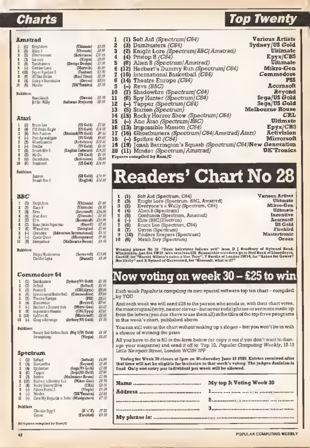
COMPUTER SWAP

Please write your copy in capital letters on the lines below

Name ....

Address ....

Telephone ....



Charts

Amstrad

1	(1)	Knightlore	(Ultimate)	£9.95
2	(5)	Alien 8	(Ultimate)	£9.95
3	(5)	Ghostbusters	(Activision)	£10.99
4	(3)	Sorcery	(Virgin)	£9.95
5	(8)	Tankbusters	(Design Design)	£7.95
6	(–)	Combat Lynx	(Martech)	£8.95
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10	(6)	Minder	(DK'Tronics)	£9.95

Bubblers:

Hunchback	(Ocean)	£8.95
Jet Set Willy	(Software Projects)	£8.95

Atari

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10	(8)	Beachead	(US Gold)	£14.95

Bubblers:

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BBC

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3	(3)	Revs	(Acornsoft)	£14.95
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5	(3)	Elite	(Acornsoft)	£14.95
6	(2)	Brian Jacks Superstar	(Durell)	£7.95
7	(6)	Wizardore	(Imagine)	£7.95
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Bubblers:

Magic Mushrooms	(Acornsoft)	£12.95
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1	(1)	Dambusters	(Sydney/US Gold)	£9.95
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5	(2)	Theatre Europe	(PSS)	£9.95
6	(4)	Shadowfire	(Beyond)	£9.95
7	(–)	Herbert's Dummy Run	(Micro-Gen)	£9.95
8	(9)	Impossible Mission	(CBS/Epyx)	£7.95
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6	(10)	Herbert's Dummy Run	(Mikro-Gen)	£9.95
7	(6)	Rocky Horror Show	(CRL)	£8.95
8	(–)	Falcon Patrol 2	(Virgin)	£9.95
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10	(–)	Give My Regards to Broad Street	(Mindgames)	£7.95

Bubblers

Chuckie Egg 2	(A'n'F)	£7.95
Gyron	(Firebird)	£9.95

All figures compiled by Ram/C

Top Twenty

1	(1)	Soft Aid *(Spectrum/C64)*	Various Artists
2	(3)	Dambusters *(C64)*	Sydney/US Gold
3	(2)	Knight Lore *(Spectrum/BBC/Amstrad)*	Ultimate
4	(4)	Pitstop II *(C64)*	Epyx/CBS
5	(8)	Alien 8 *(Spectrum/Amstrad)*	Ultimate
6	(12)	Herbert's Dummy Run *(Spectrum/C64)*	Mikro-Gen
7	(10)	International Basketball *(C64)*	Commodore
8	(14)	Theatre Europe *(C64)*	PSS
9	(–)	Revs *(BBC)*	Acornsoft
10	(7)	Shadowfire *(Spectrum/C64)*	Beyond
11	(6)	Spy Hunter *(Spectrum/C64)*	Sega/US Gold
12	(–)	Tapper *(Spectrum/C64)*	Sega/US Gold
13	(5)	Starion *(Spectrum)*	Melbourne House
14	(15)	Rocky Horror Show *(Spectrum/C64)*	CRL
15	(–)	Atic Atac *(Spectrum/BBC)*	Ultimate
16	(13)	Impossible Mission *(C64)*	Epyx/CBS
17	(16)	Ghostbusters *(Spectrum/C64/Amstrad/Atari)*	Activision
18	(–)	Spitfire 40 *(C64)*	Mirrorsoft
19	(19)	Jonah Barrington's Squash *(Spectrum/C64)*	New Generation
20	(11)	Minder *(Spectrum/Amstrad)*	UK'Tronics

Figures compiled by Ram/C

Readers' Chart No 28

1	(1)	Soft Aid (Spectrum, C64)	Various Artists
2	(3)	Knight Lore (Spectrum, BBC, Amstrad)	Ultimate
3	(2)	Everyone's a Wally (Spectrum, C64)	Mikro-Gen
4	(4)	Alien 8 (Spectrum)	Ultimate
5	(5)	Confuzion (Spectrum, Amstrad)	Incentive
6	(–)	Elite (BBC/Electron)	Acornsoft
7	(6)	Bruce Lee (Spectrum, C64)	US Gold
8	(7)	Gyron (Spectrum)	Firebird
9	(10)	Finders Keepers (Spectrum)	Mastertronic
10	(8)	Match Day (Spectrum)	Ocean

Winning phrase No 28 "Keen hairstyler follows yeti" from D J Bradbury of Bylward Road, Wimbledon London SW20 who receives £25. Honourable mentions go to Neil Reed of Llanedeyrn, Cardiff for "Harold Wilson's eaten a live Tory", T Burdis of London SW14, for "Ashes for Gower? Not likely" and S Ryland of Gravesend, for "Eeeeaak, what is it?"

Now voting on week 30 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 30 closes at 5pm on Wednesday June 19 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .... **My top 3: Voting Week 30**

Address .... 1...

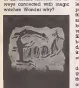
.... 2...

.... 3...

My phrase is: ....

DEMONS

Fiona Rides Out is a new release for the Commodore 64 very much in the style of *Cauldron* and *Sorcery* For some reason arcade games which let you collect and use things using joystick controls and generally have some sort of adventure element are always connected with magic witches Wonder why?



Anway *Fiona Rides Out* has you helping Fiona, foul witch, to regain her power – this involves retrieving her spell book found on the 12th screen To get there she needs to collect various tools and spells To get spells she has to blast at flying ingredients If Fiona fails she gets sent to Hell where all is burning rocks and demons

Graphically it's a reasonable though not staggering game and the music – gothic Bachian type stuff – is a bit reminiscent of other games Still, there are a few original ideas and you get a free game, *Daredevil Dennis*, on the other side of the tape

Programe *Fiona Rides Out*
Price *£7 95*
Micro *Commodore 64*
Supplier *Viper*
Eardley House
182/184 Campden
Hill Road
London W8

BUDGET

It's always difficult to see why the average person would want to keep their bank account on a micro

People seem to forget that whilst a computer can tell you all sorts of clever things about current totals, standing orders, you do have to remember to type things in.

Can you really imagine having a regular time when you sit at your compuuer and input all the cheques you've written, to whom, and when?

If you can then *QL Bank Account* is very good Microdrives mean that, at least, compared to tape, the program loads quickly, as do file records The design is simple to use, there are 17 budget headings under which outgoings may be filed, and once you enter the basic details of a standing order the computer will include it in each month's balance automatically

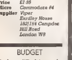
You can dump statement details to Epson printers, but there is an ominous warning that should you start the print out process with no printer attached, the program will hang up and you have to restart the program with all the current information in the computer being completely lost.

This is not Cenprime Software's fault but Sinclair's I mention it because it is these kind of annoying hiccups that have plagued the *QL* since its introduction.

Program *QL Bank Account*
Price *£19 95*
Micro *QL*
Supplier *Cenprime*
Software
10 Castle Street
Rugby
CV21 2TP

ILL-DEFINED

C5 Clive is a cheapie £1 99 game from Scorpio Software



Really the only noteworthy feature of the game is that it features a C5 But since this is, in fact, a tiny little user-defined graphic that could equally well be a piece of cheese that element is hardly crucial

The game is a standard dodge the baddies game mixed with a sort of bike jump-type game You move the C5 up and down past odd objects collecting batteries (God knows, you need them) and then leap over things like people and buses.

Objects are, without exception, blobby and ill-defined, and whilst it's cheap I think this one is below the average level of, say, a Mastertronic game

Program *C5 Clive*
Price *£1.99*
Micro *Spectrum*
Supplier *Scorpio*
Gamesworld
307-313 Corn
Exchange Building
Cathedral Street
Manchester 4

RECREATION

Yes, it's the one Commodore 64 game players have been waiting for – *Elite* on the C64 Written by Ian Bell and David Braben, who wrote the BBC version, it is a faithful recreation of the original, with a few extra features included

The colours on the various displays have been greatly enhanced – now you have four colours for the view screen and eigth for the status panels This means that you can actually have glorious orange explosions as your missiles tear through the fragile skin of your target.

What it really means, of course, is that the displays are far clearer, much easier to understand, and somehow crisper It all adds to the illusion of being in the cockpit of your Cobra Mark III

The C64 *Elite* also has music – but only for the docking sequences And guess what it is – that's right, da-da-da-dada, de-du, du-du, etc – the Blue Danube

In addition to the command that turns the music on/off, you can also remove the lines that you see on the planets – this speeds up the whole game There are also a lot of extra features that aren't mentioned in the instruction book – this is deliberate, so I shan't spoil them for you.

Bell and Braben have done an excellent job converting their game for the Commodore, it plays superbly and it seems to be as fast as the BBC version.

Program *Elite*
Price *£17.95*
Micro *Commodore 64*
Supplier *Firebird Software*
Wellington House
Upper St Martin's
Lane
London WC2H 9DL

TRUMPED

Bridge for the Amstrad from Kuma is one of the first versions on this machine of this classic card game. The difficulty of implementing *Bridge* on the computer, I reckon is programming the computer to play the cards convincingly after the bidding

Kuma's *Bridge* after testing, was declared by those in the office who know, to be a sound but overly cautious bidder, which probably means it would be good for practising with.

Graphically the game is very impressive – the high resolution Amstrad screen is well suited to clearly displaying fine detail and there is much use made of it in this program. Hands are very clearly depicted and bidding, score, tricks and cards are all displayed on screen

Program *Bridge*
Price *£8.95*
Micro *Amstrad*
Supplise *Kuma Computers*
12 Horseshoe Park
Pangbourne
RG8 7JW

New Releases

DIVIDED

Danger Mouse in Double Trouble is now available on the Amstrad. Graphically it's marvellous – the design for the main characters is taken straight from the original sketches for the cartoon. As a game I'm not so sure

I always think it's a bad sign if a game is divided into sections – separate games are too often bodged together with no real attempt to unify them. The idea is that three inferior games, not good enough to stand up on their own, may produce an acceptable end result if you put them together. It doesn't work

Not that *Danger Mouse* is the worst example of this syndrome, the effort that has gone into the graphics prevent that. It's more a question, I think, of not really having a good idea for the game – what you get instead are three OK ideas

The sections are these: Danger Mouse is first seen with Penfold flying in his aerocar. At different height levels they are confronted by different baddies and must launch the correct repellent. Stage two is a jungle game-jump over the swamp avoiding the crocodile and then climb the tree using the swinging monkeys. Part three is a form of *Mastermind* with an excellent Danger Mouse animated sprite trying to match a coloured pattern.

If you like Danger Mouse and great graphics you may love this, but for pure game alone I can't recommend it.

Program *Danger Mouse in Double Trouble*
Price *£7 95*
Micro *Amstrad*
Supplier *Creative Sparks, Thompson Houses, 296 Farnborough Road, Farnborough, Hants GU14 7NF*

BLOCKAGE

Pipeline by Taskset on the Commodore was one of the more inventive games on the machine, the basic idea being to keep the water flowing through a pipe by constantly repairing the blockages that appear in it. This means moving a little workman figure around – there are the compulsory nasty objects zooming around to make things tough. A simple basic idea that worked

The game has been produced for the Spectrum by Viper. In the admirable intention of doing a sophisticated job the programmer has, I feel, somewhat spoilt it. Basic game plan is the same – move your workman around the pipe taking him to each new blockage

But Viper has produced large sprites for the workman and 'you' (a sort of foreman figure) in the Wally vein, which would be fine except that they have become difficult to move using the most sensitive joystick we have. It proved hard to move them smoothly around the maze of pipes

Even if you argue that it's just something you have to get used to, it doesn't alter the fact that the big sprites look wrong for the game and I found it surprisingly off putting.

A contentious one then, not dross but not much fun to play either. You may react differently

Program *Pipeline*
Price *£6 95*
Micro *Spectrum*
Supplier *Consolidated Software Marketing, 183/184 Campden Hill Road, London W8 7AS*

Pick of the week

HARD LUCK

Whatever you believe someone or something somewhere is going to prove you wrong and so it is with gritted teeth that I own up to finding a *Manic Miner* derived game with an alternative title utterly wonderful.

The game is *Dynamite Dan* and it has a main character who looks incredibly like Sebastian Flyte and appears to loll about as though surveying the dreaming spires. Let's dismiss the plot quickly – collect the sticks of dynamite, blow up the safe, collect the papers and escape. The usual, in other words

What makes the game is the graphics – large, witty, bizarre and beautifully animated and not a colour resolution problem in sight (well, very very few, anyway). Visually the game looks a little like the recent Mikro Gen *Wally*

The game is packed with screens and, more significantly none of them are throwaways, each has something remarkable, and horribly difficult puzzles in the left-right-jump tradition, as ever, timing is all.

Aside from the expected vast collection of assorted bouncing sprites the game features elevators, transporters, a river that runs along the bottom of several screens with a boat that is very difficult to catch and appears very rarely, and the oddest hard luck screen I've seen – you are executed by a funny man in a spaceship who then turns to face you, grinning madly

Dynamite Dan is not just another *Miner* surrogate and is at least as essential to your collection as the original. It's a pity about that name, though

Program *Dynamite Dan*
Price *£6 95*
Micro *Spectrum*
Supplier *Mirrorsoft, Holborn Circus, London EC1P 1DQ*

This Week

Program	Type	Micro	Price	Supplier
Smuggler's Cave	Ad	Amstrad	£5.95	CRL
Danger Mouse Db Trb	Arc	Amstrad	£7.95	Creative Sparks
Timebomb	Arc	Amstrad	£6.50	Black Knight
Bridge	S	Amstrad	£8.95	Kuma
Handicap Golf	S	Amstrad	£6 95	CRL
Hack Attack	Ut	Amstrad	£8.95	Ash Byproducts
Mastercalc	Ut	Amstrad	£10 95	Amsoft
Mr Frosty + Penguins	Arc	Commodore	£1.95	Scorpio
A View To A Kill	Arc	Commodore 64	£10 99	Domark
Fiona Rides Out	Arc	Commodore 64	£7.95	Viper
Jet Set Willy II	Arc	Commodore 64	£7.95	Soft Projects
Way Exploding Fist	Arc	Commodore 64	£9 95	Melbourne House
Rhythm + Pitch	Ed	Commodore 64	£8 95	Chalksoft
QL Bank Account	Ut	QL	£10 95	Cenprima
A View To A Kill	Arc	Spectrum	£10 99	Domark
Ancient Quests	Arc	Spectrum	£7.95	Mirrorsoft
C5 Clive	Arc	Spectrum	£1.95	Scorpio
Dynamite Dan	Arc	Spectrum	£6.95	Mirrorsoft
Happy Hour	Arc	Spectrum	£1.99	Scorpio
Phineas Frog	Arc	Spectrum	£7.95	Mirrorsoft
Pipeline	Arc	Spectrum	£6.95	Viper
Planet Attack	Arc	Spectrum	£1.95	Scorpio
Turntaking	Ed	Spectrum	£5 95	Learning Proces

Key: Ad – adventure; Arc – arcade; Ed – education; S – strategy simulation; Ut – Utility

New Releases

SNEAKY

Jet Set Willy II is ont alas, the legendary Willy and the taxman but is the deluxe souped up version of the original *Jet Set Willy* Souped up primarily in that it has 100 rooms almost twice the original

The layout is mostly the same The new rooms have been placed all together high up in Willy's mansion forming a second storey. Best addition of all though, is the fact that now you can go down the famous toilet in the first screen. In the original game just about everybody tried to do it but now you can actually go somewhere

Some of the new screens are very good with many sneaky references to other games throw in 'Attack of the' is related to an ancient Imagine game called *Jumping Jack* in which you have to leap up a screen with each level consisting of a floor that rushes left and right and frequently produces holes you fall down.

Getting to most of the new rooms means finding a spaceship and activating it – a neat way of fitting in the rooms without upsetting the layout of Willy's Mansion. There's nothing dramatically new about the game, of course, but the new rooms are, in many cases, inventive and fiendish. The milling hoards of *Jet Set Willy* addicts should be delighted

Program *Jet Set Willy II*
Price *£7 95*
Micro *Commodore 64*
Supplier *Software Projects Bearbrand Complex Allerton Road Woolton Liverpool L26 7SF*

WAR GAMES

Battlefields is a two game package for the BBC B, published by the BBC itself Both games are wargames – one is the Battle of Waterloo, the other the American Civil War

The screen display on both games is rather uninspiring, but no doubt this is due to the limitations on the good old Beab

Waterloo has a dark blue background with a few trees and little huts scattered around, representing forests and towns

The players take it in turns, first the Allies, then the French. Each side has ten units, with a mixture of cavalry, infantry and artillery Cavalry units can move two squares, infantry unlw one

More care should have been taken with the program, it refuses to recognise lower case input for the movement orders

On the plus side, this is one of the few two player games I have seen that makes any use of the computer to generate a realistic feel.

Enemy forces are not shown unless one of your units is next to them, in which case you get a sighting report.

Civil War, although it covers a far larger area, is very similar Again each side has ten units, but each unit can move up to eight squares

The objective is to score points by occupying enemy territory – each square conquered scores one point

I can't help feeling that both games are rather too simplistic, both in terms of presentation and actual play

The usual drawbacks to two player computer wargames are to some extend ameliorated, but I would have preferred a computer opponent.

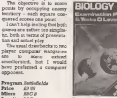
Program *Battlefields*
Price *£9 95*
Micro *BBC B*
Supplier *BBC 35 Marylebone High Street London W1M 4AA*

REVISION

Sphere, the book publisher, has just issued a range of educational titles for O level students They are easy to summarise and simple in scope – each one consists of dozens of revision questions on each subject presented in the form of a multiple choice exam

That's it really, the programs have no other function beyond helping O level student test themselves – if you get something wrong the right answer is given but no explanation is offered. Although questions are divided up into subject areas revision can be confined to particular – you can take a general test on all subjects if you wish

So, if revision aids are what you need, then at present the range covers Biology, Mathematics, Physics and Chemistry It won't actually teach you anything though



Program *Biology*
Price *£5 95*
Micro *Spectrum*
Supplier *Sphere 30-32 Gray's Inn Road London WC1X 8JL*

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases *Popular Computing Weekly* [illegible]-10 Little Newport Street, London WC2R 9LD.

This Week

Amsoft Brentwood House, 169 Kings Road Brentwood Essex 0277 230222 **Ash Byproducts** 183 Bristol Road Edgbaston, Birmingham B5 7UB **Black Knight** 60 Slades Drive Chislehurst, Kent BR7 6JX 01-467 7451 **CRL** CRL House 9 Kings Yard Carpenter's Road London E15 2HD 01-533 2918 **Cenprime** 933 Foleshill Road Coventry CV6 5HN 0203 666162 **Chalksoft** 37 Willowsea Road Worcester WR3 7QP 0905 55192 **Creative Sparks** Thompson House 296 Farnborough Rd Farnborough, Hants 0252 543333 **Domark** 204 Worple Road London SW20 8PN 01-947 5624 **Kuma**, Kuma Computers 12 Horseshoe Park Pangbourne RG8 7JW 07357 4335 **Learning Process** 38 Homedale House 3 Brunswick Road, Sutton SM1 4DG **Melbourne House** 39 Milton Trading Estate Abingdon Oxon OX14 4TD 0235 835001 **Mirrorsoft**, Mirror Group, Holborn Circus London EC1P 1DQ 01-353 0246 **Scorpio** 307-313 Corn Exchange Building Cathedral Street, Manchester 4 061 834 2292 **Soft Projects** Bear Brand Complex, Allerton Road, Woolton Liverpool L25 7SF 051 428 7990 **Viper** Eardley House, 182/184 Campden Hill Road London W8 7AS 01-221 3592

Written word

Every so often good ideas do emerge from the collective endeavours of those in the computing field. And more often than not they appear briefly, and then sink without trace

Take icons for example. An increasingly strong band of manufacturers now believe that icons with either mice or touch screens are the way for the future

I'm not so sure The idea behind icon thinking is to develop a system to use a computer with a kind of prompting with pictures. Yes, it is true that it is simpler to indicate a disc icon with a mouse pointer than to type 'Save B "filename",' but even so, in ordinary use still the main body of work with the computer involves typing in alpha-numeric information using a keyboard

Most information given to the computer must still be in a written format and is stored in that form. This is inefficient. The less adept the typist is the slower the information is entered into the machine How can the author be freed from the tyranny of the keyboard? Icons certainly don't go far enough.

Instead of using symbols to represent the words, the user could actually use the words themselves – ie, dictate to the computer

It is, perhaps surprisingly, the telecommunication companies which are at the moment concentrating on developing speech recognition/generation systems The computer companies do seem to see the possibilities in doing away with the keyboard altogether, and are investing their money in the idea of icons *et al* Even so, within another ten years we should have an adequate speech interpreter NEC's general manager has claimed 'We're 10 or 20 years off a speaker-independent, large vocabulary, connected speech recognition system.'

Speech generation – the other side of the communication gap – is now so far advanced that even home micros costing under £100 can be fitted with £30 speech generators.

So, by the turn of the century or before, all computers could well be dealing with the outside world using the spoken word Everything – from international businesses' mainframes to the local village shop's stock-taking micro – will be able to speak to their user and listen to the reply The system would be cheap enough to be implemented even on home micros.

One immediate effect will be in publishing The cost of publishing a book will be measured by how much memory it takes up – and given the way prices are falling at the moment, coupled with the enormous market for memory chips once 'home publishing' becomes feasible, even specialist books should not cost over £5

With artificial intelligence, then the computers would no longer merely be able to respond to our orders they would be able to explain difficult passages Further, there would no longer be any language barriers Already the EEC is using a system called Systran – for analysing and translating written language

Next year a much more powerful machine, Eurotra, is to be brought into service, which will deal with all the 42 different European languages and their variations

Suddenly, the keyboard will no longer be needed to communicate with computers, all one need do is speak to them. As soon as this happens, popular books will speedily be put on the systems If the language analysis programs pattern recognition systems are sophisticated enough it will merely be a matter of letting a computer scan each page of a book – possibly a ten minute operation – and at the same time the computer will be able to assimilate any pictures or graphics for it to display on screen.

Fifty years from now written language could have all but disappeared. The most permanent form documents would take would be as digital codes stored in the computer's memory

Who will need to read or write then?

Andrew Mulholland

Number puzzle

Puzzle No 162

Here is an unusual crossnumber puzzle

In the grid, *a*, *b*, *c* and *d* are four two-digit numbers which interlock in the centre four squares (*a* and *c* are numbers across, and *b* and *d* are numbers down)

The *squares* of these numbers are represented by the capitals *A*, *B*, *C*, and *D* which fit in the perimeter squares Can you find their values?

Solution to Puzzle 157

The only way of reaching the maximum score without being eliminated is if the first dart lands on the '13'

```
10 DATA 20,5,12,9,14,11,8,16,7,19,3,17,2,15,10,
6,13,4,18,1,20,5,12,9,14,11,8,16,7,19,3,17,2,15,
 10,6,13,4,18,1
20 FOR START=1 TO 20
30 RESTORE
40 READ Q:IF Q<>START THEN GOTO 40
50 LET T=START
60 FOR N=1 TO 19
70 READ R
80 LET T=T+R
90 IF T/START=INT(T/START) THEN GOTO 120
100 NEXT N
110 PRINT START
120 NEXT START
```

In the program the scores for each of the segments of the segments of the board (taken in an anti-clockwise direction) are stored in the *Data* statement. These are repeated to allow a full run of 20 scores from any start position. The program tests each start score in turn and sums up the totals for each by reading from the Data line

Winner of Puzzle No 157

The winner is M W Peters of Spetisbury, nr Blandford, Dorset, who receives £10

Rules

The closing date of Puzzle No 163 is July 10

The Hackers

Herbert's



Dummy Run

Trouble In Store for Herbert

Spectrum 48K £9 95
Commodore 64 £9 95
Amstrad CPC 464 £9 95



MIKRO-GEN

44 The Broadway, Bracknell, Berks 0344 427317